STUDIES IN DECEIT

⁂

HARTSHORNE AND MAY

UNIVERSITÉ DE MONCTON

Digitized by the Internet Archive
in 2023 with funding from
Kahle/Austin Foundation

https://archive.org/details/bwb_O8-CMX-237

STUDIES IN DECEIT

THE MACMILLAN COMPANY
NEW YORK · BOSTON · CHICAGO · DALLAS
ATLANTA · SAN FRANCISCO

MACMILLAN & CO., LIMITED
LONDON · BOMBAY · CALCUTTA
MELBOURNE

THE MACMILLAN CO. OF CANADA, LTD.
TORONTO

STUDIES IN THE NATURE OF CHARACTER

BY THE

CHARACTER EDUCATION INQUIRY
TEACHERS COLLEGE, COLUMBIA UNIVERSITY

IN COÖPERATION WITH

THE INSTITUTE OF SOCIAL AND RELIGIOUS RESEARCH

I

STUDIES IN DECEIT

BOOK ONE

GENERAL METHODS AND RESULTS

HUGH HARTSHORNE AND MARK A. MAY

BOOK TWO

STATISTICAL METHODS AND RESULTS

MARK A. MAY AND HUGH HARTSHORNE

128496

New York
THE MACMILLAN COMPANY
1928

All rights reserved

BIBLIOTHEQUE
UNIVERSITE DE MONCTON

PRINTED IN THE UNITED STATES OF AMERICA

Copyright, 1928,
By THE MACMILLAN COMPANY.

Set up and electrotyped. Published April, 1928.

Norwood Press
J. S. Cushing Co. — Berwick & Smith Co.
Norwood, Mass., U.S.A.

FOREWORD

The first definite proposal leading directly to the inauguration of the Character Education Inquiry came from the Religious Education Association. For many years the problem of how to evaluate the results of moral education objectively had been discussed at its annual meetings and definite proposals had been drawn up from time to time for the conduct of researches in this field. At the 1922 meeting the interest in these studies took the form of a resolution to attempt a careful and scientific investigation of the question, "How is religion being taught to young people and with what effect?" In following up this resolution, the late Dr. Henry F. Cope, who was then Secretary of the Association, wrote to the Institute of Social and Religious Research in May, 1922, asking for a grant for the prosecution of such a study. At the moment, however, since a statement of methods to be employed in the proposed study had not yet been prepared, the Institute decided to take no decisive step.

Meanwhile, in October, 1922, the Committee on Curriculum of the International Lessons Committee asked the Institute to provide funds for a critical study of curriculum material; and in November, 1922, the Bureau of Research Service of the International Council of Religious Education requested a grant for three successive years to carry on investigations in the field of religious education.

Confronted with these three requests touching the same general field, the Executive Secretary of the Institute of Social and Religious Research called an informal conference of representatives of the three petitioning organizations. The conference recommended that the Institute call a larger meeting, of experts, in order to discuss the entire subject of research in religious education and arrive at a judgment as to the best course to pursue.

There was therefore assembled in New York on January 6, 1923, a group of twelve specialists in religious and general education and in psychology under the chairmanship of the late President Ernest

D. Burton. After prolonged discussion recommendations in substance as follows were adopted:

1. Study the actual experiences of children which have moral and religious significance and the effects for periods of time of the moral and religious influences to which children, youth, and adults have been exposed.
2. Apply the objective methods of the laboratory to the measurement of conduct under controlled conditions.
3. Engage one or more full-time investigators and associate with them advisers and assistants.
4. Secure collaboration by various institutions and groups.
5. Make the results of the study available in both technical and popular forms.

The direction and location of the study was then made the subject of an extended inquiry by the Institute. In the spring of 1924, it secured the consent of Dr. Hugh Hartshorne, then Professor of Religious Education at the University of Southern California, and of Dr. Mark A. May, then Professor of Psychology at Syracuse University, to serve as co-directors. At the same time Teachers College, Columbia University, agreed to undertake the project as "an inquiry into character education with particular reference to religious education," and it was placed under the immediate supervision of Professor Edward L. Thorndike as director of the Division of Psychology of the Institute of Educational Research. The two investigators were thereupon appointed to the college staff.

In order to provide the investigators with effective advice and counsel, the Institute of Social and Religious Research and the College joined in the appointment of a group of advisers for the Inquiry. The original list is as follows:

Ernest D. Burton
Otis W. Caldwell
George A. Coe
Harrison Elliott
Mary R. Ely (Mrs. E. W. Lyman)
E. Morris Fergusson
Galen M. Fisher
Edward L. Thorndike
Luther A. Weigle

Upon the death of President Ernest D. Burton, Professor Paul Monroe was asked to serve in his place.

The agreement with Teachers College called for a three-year study, to begin September 1, 1924, the entire funds being supplied by the Institute of Social and Religious Research. In June, 1926, the directors of the Institute, after reviewing the progress made to date and in accordance with the recommendation of the advisers, voted to supply funds for the continuation of the Inquiry for two additional years, making five years in all.

GALEN M. FISHER, Executive Secretary
Institute of Social and Religious Research

ACKNOWLEDGMENTS

It would give the investigators great satisfaction to name the schools, the principals, and the teachers who have coöperated with the Inquiry. Unfortunately the nature of the material makes this undesirable, as it would enable anyone to identify the institutions where testing has been done and permit hasty comparisons and conclusions that might be not only invidious but quite unwarranted by the facts. These generous friends must therefore remain anonymous.

The advisers informally asked to coöperate with the investigators, whose names are given in the Foreword, have been astonishingly prodigal of their time in reading lengthy reports and attending meetings. And besides these official appointees there are many others to whom the investigators have turned for counsel both at Teachers College and elsewhere.

Dr. Thorndike, the administrative head of the Division of Psychology of the Institute of Educational Research, Teachers College, has always been available for the helpful criticism for which he is so justly famous, and his staff has been ready at all times to assist in field work. We are particularly indebted to Dr. Ella Woodyard, who not only read the entire set of proofs but who has also aided our work in many other ways.

The staff of the Inquiry has been unusual in its quality and faithfulness, and, as always in work of this kind, it has shouldered the bulk of the drudgery.

The manuscript of Book One was read by Mrs. W. W. Rockwell, and many changes in language and style were made as the result of her careful criticism.

This has been a coöperative enterprise with many co-workers, with all of whom the investigators are glad to share such credit as the Inquiry may deserve.

We have quoted freely from three of our published articles with the kind permission of the publications in which they have appeared:

"The Objective Measurement of Character," *Pedagogical Seminary*, March, 1925

"First Steps toward a Scale for Measuring Attitudes," *Journal of Educational Psychology*, March, 1926

"Sibling Resemblance in Deception," *Twenty-Seventh Yearbook*, National Society for the Study of Education, Public School Publishing Company

We are also under obligation to Teachers College, Columbia University, to the C. H. Stoelting Company, to the Institute for Child Guidance, and to the Public School Publishing Company for permission to quote from published material under their control.

H. H.
M. A. M.

New York,
October 1, 1927.

CONTENTS OF BOOK ONE*

CHAPTER PAGE

INTRODUCTION. THE SCOPE AND METHOD OF THE INQUIRY . . . 3

The General Problem and Possible Methods of Attack. Reasons for the Approach Chosen. Classification of Problems. Choice of Sample Studies. Values and Limitations of the Tests Used. The Form of the Report. General Conclusions

PART I

THE PROBLEM OF MEASUREMENT

I. DECEIT AS AN OBJECT OF STUDY 19

The Nature of Deception. Situations Provocative of Deception. The Problem of Correction

II. PREVIOUS EFFORTS TO MEASURE DECEPTIVE CONDUCT . . . 28

The Free Association Method. Physiological Tests. Clinical Case Studies. Conduct Tests of Deception. Conclusions

III. METHODS USED BY THE INQUIRY FOR MEASURING DECEPTION . 47

Methods for Measuring the Cheating Type of Deceptive Behavior in Classroom Situations, in Work Done at Home, in Athletic Contests, and in Parlor Games. Methods for Measuring the Stealing and Lying Types of Deception

IV. APPLICATION OF TECHNIQUES AND GENERAL RESULTS . . . 104

Description of School Populations Studied. Tables Showing Number of Pupils Tested, by Tests, Population, and Grade. The Administration of the IER Tests; the Problem of Motivation; the Standardized Procedure; Typical Results of the Technique. The Administration of the Speed Tests; the General Procedure; Typical Results of the Technique. The Administration of the Coördination and Puzzle Tests, the Athletic Contests, the Party Tests, the Stealing Tests, and the Lying Tests

V. THE VALUE OF THE TECHNIQUES FOR MEASURING DECEPTION . 131

Reliability. Validity. Theoretical Validity. Practical Value. Summary

* The Table of Contents and lists of tables and figures for Book Two will be found immediately following page 414 of Book One.

PART II

FACTORS ASSOCIATED WITH DEECEIT

CHAPTER PAGE

VI. METHODS EMPLOYED IN STUDYING THE CAUSES AND SIGNIFICANCE OF DECEIT 149
Qualitative and Quantitative Descriptions. Statistical Terms. How Comparisons between Distributions Are Made. How Individual Comparisons Are Made. The Measurement of Relationship (Correlation). Partial Correlations

VII. AGE, SEX, INTELLIGENCE, AND PHYSICAL AND EMOTIONAL CONDITION 166
Sex and Age in Relation to Deception. Intelligence and Cheating. Physical Condition and Cheating. Emotional Condition and Cheating

VIII. METHODS OF MEASURING THE CULTURAL BACKGROUND . . 194
The Sims Score Card. The Good-Manners Test. The Direct Study of Homes. The Burdick Test of Culture (Apperception Test)

IX. ECONOMIC AND CULTURAL FACTORS ASSOCIATED WITH THE TENDENCY TO DECEIVE 213
The Sims Score. The Good-Manners and Apperception Tests. Quantitative Home Background Scores. Occupation. Occupation and General Socio-economic Level. Sims-Burdick-Occupation Composite. Summary

X. THE BIOLOGICAL *versus* THE CULTURAL INFLUENCE OF THE FAMILY 230
Populations. General Results of Sibling Study. Interpretation. Summary

XI. RACE, NATIONALITY, AND RELIGION IN RELATION TO DECEPTION 246
Race, Nationality, and Deception. Religious Affiliation and Deception. Summary

XII. SCHOOL STATUS AND SCHOOL HONOR 257
School Grade. Retardation. Attendance. Achievement. Deportment. Summary

XIII. MISCELLANEOUS FACTS ASSOCIATED WITH DECEPTION . . . 274
Association. Sociability. Suggestibility. Attendance at Motion Pictures

XIV. A COMPARISON OF HONEST AND DISHONEST CHILDREN . . . 283
Selection and Description of Cases. Fundamental Differences between Honest and Dishonest Groups. Relative Significance of Basic Group Differences. Individual Differences between Honest and Dishonest Children. Summary

PART III

MORAL VALUES IN CONTEMPORARY EDUCATION

CHAPTER PAGE

XV. PROGRESSIVE METHODS AND SCHOOL MORALE 313
Length of Attendance and Deception. Home Background *versus* Progressive Methods. School Morale

XVI. TEACHER INFLUENCE 324
Exceptional Classroom Differences

XVII. GROUP MORALE 330
Correlations of Mean Classroom Deception Scores. Constancy of the Group. Constancy of Teacher Influence. Sequent Groups. Summary

XVIII. SAMPLE STUDIES OF THE EFFECTS OF MORAL AND RELIGIOUS EDUCATION 339
System X. Preliminary Comparisons. Populations F to J. X and Non-X Pupils Compared. Differentiations within X Groups Due to Length of Membership, Rank Achieved, and Rate of Advancement. Interpretation of Facts

XIX. SAMPLE STUDIES OF THE EFFECTS OF MORAL AND RELIGIOUS EDUCATION (*Continued*) 356
Sunday-School Teaching and Day-School Conduct. Hebrew-School Teaching and Day-School Conduct. System Y

XX. EXPERIMENTAL EFFORTS TO TEACH HONESTY 368
A Three Weeks' Effort to Teach Honesty by Story and Discussion. Influence of the Mention of God on Honesty

PART IV

GENERAL CONCLUSIONS AND PROBLEMS

XXI. THE SPECIFIC NATURE OF CONDUCT AND ATTITUDE . . 377
The Nature of the Deceptive Act. The Specific Nature of Conduct. The Specific Nature of Attitudes

XXII. THE MOTIVATION OF DECEIT 391
Control of School Motives. The Questioning of Pupils. Inferential Data: Relation between Deception and Ability; Miscellaneous Concomitants of Deception

XXIII. PROBLEMS AND CONCLUSIONS 402
Preliminary Analysis of Deception. Summary of Techniques. Summary of Conclusions. Implications for Moral Education

APPENDICES . . . . 245 of Book Two

INDEX . . . . 299 of Book Two

TABLES

TABLE PAGE

I. Comparison of Changes from Day to Day in Test Scores of Sixteen Pupils (I) When No Chance to Cheat Was Given and (II) When There Was a Chance to Cheat on One Occasion but Not on the Other 68
II. Typical Gains and Losses in Arithmetic between the First and Second Day When No Cheating Went On 69
III. Approximate Number of Pupils in Each School or System Subjected to the Deception Tests
(A) Public Schools 107
(B) Private and Standardizing Schools 108
IV. Approximate Number of Deception Tests Administered, by Grades 108
V. Types of Test Used to Measure Deception 109
VI. Characteristic Features of CEI Techniques for Measuring Deceit 147
VII. Age-Deception Correlations for IER School Xi Scores . . 170
VIII. Age-Deception Correlations for the Speed Xi Scores . . 172
IX. Age-Deception Correlations for the Coördination Xi Scores . 175
X. Age-Deception Correlations for the Athletic Contest Scores . 175
XI. Age-Deception Correlations for IER Home Xi Scores . . 179
XII. Age-Deception Correlations for CT Ratio 180
XIII. Correlations between IER School Cheating and Intelligence Level (CAVI) 183
XIV. Correlations between Speed Tests and Intelligence Level (IQ) 184
XV. Correlations between Coördination Tests and Intelligence Level 185
XVI. Correlations between Lying (SA) and Intelligence Level . 186
XVII. Correlations between IER Home Cheating and Intelligence Level (CAVI) 187
XVIII. Correlations between CT Ratio and Intelligence Level . . 187
XIX. Partial *r*'s between Intelligence and Deception, Home Background Constant 189
XX. Correlation of Physical Condition and Deception . . . 192
XXI. Sample Distributions of Sims Scores 214
XXII. Correlation of Sims Score with Different Types of Deception 217

TABLE PAGE

XXIII. Correlation of Burdick Scores with Age, Intelligence, and Sims Scores 218
XXIV. Correlation of Burdick Scores with Deception . . . 219
XXV. Correlation of Burdick-Sims Total Score with Deception . 219
XXVI. Occupational Differences in CT Ratio 224
XXVII. Comparison of Occupational Differences in School Deception Actually Found, with Differences That Might be Expected Because of Differences in Intelligence . . . 226
XXVIII. Sims Score and Occupational Level Compared as to the Association with Deception 227
XXIX. Summary of r's between Cultural Factors and Deception . 228
XXX. Statistical Results of Sibling Study 232
XXXI. Rank Order of Populations in Social Variability and Sibling Correlation 238
XXXII. Sibling Resemblance, Sims Score Constant . . . 240
XXXIII. Sibling Resemblance, Intelligence Constant . . . 241
XXXIV. Coefficients of Correlation between Siblings in Deception and Intelligence, Corrected for Attenuation . . . 244
XXXV. Occupational Status of Racial and National Groups in Populations A and C 249
XXXVI. Median CAVI Intelligence Scores of Racial and National Groups 250
XXXVII. Correlations between Grade and Deception . . . 259
XXXVIII. Age Displacement and Deception 266
XXXIX. Intelligence Displacement and Deception 267
XL. Displacement in Age and Intelligence in Relation to Deception 268
XLI. Percentage of Attendance and Instances of Cheating . . 269
XLII. Correlation of Deception and School Achievement . . 270
XLIII. Correlation of Deportment and Deception 272
XLIV — A. Resemblance of Friends in Deception, IER School Xi . 275
XLIV — B. Resemblance of Friends in CAVI Score 275
XLV. Comparison of Sociable and Unsociable Groups of One Hundred Each 276
XLVI. Correlation between Resistance to Suggestion and School Cheating, Home Cheating, Age, and Intelligence . . 280
XLVII. Social and Religious Constituency of the HDC Group . 284
XLVIII. Handicaps of Most Honest Cases 288–289
XLIX. Handicaps of Most Dishonest Cases 290–291
L. Handicaps of Confessors 292
LI. Percentage of Prevalence of Handicaps among the H, D, and C Groups 294
LII. Denominational Proportions in H, D, and C Groups . . 296

TABLE PAGE

LIII. Racial and National Proportions in the H, D, and C Groups 298

LIV. Certain Handicap Scores of the H, D, and C Groups . 299

LV. Statistical Significance of Mean Differences Reported in Table LIV 300

LVI. Differentiated Handicap Scores of the H, D, and C Groups 305

LVII. Relative Significance of Handicaps 305

LVIII. Significance of the Differences between the H, D, and C Groups Expressed as Multiples of the Standard Errors of the Differences 305

LIX. The Correlation between Length of Attendance at a Given School and Deception in Schools C, D, F to J, and P . 314

LX. Deception Scores in Grades Five and Six 321

LXI. Rank Order of Certain Classroom Deception Means . . 326

LXII. Correlation of Mean Deception Scores 331

LXIII. Mean Ages, Sims Scores, and IQ's of X and Non-X Groups Matched in Age 344

LXIV. Deception Scores of X and Non-X Groups 344

LXV. Relative Deceptiveness of Sunday-School Children, Grades Five to Eight, School System A 358

LXVI. Relative Deceptiveness of Sunday-School Children, Grades Five to Ten, School System B 358

LXVII. Median Cheating Scores of 204 Protestant Sunday-School Children 360

LXVIII. Relative Deceptiveness of Hebrew-School Children, Grades Five to Eight 361

LXIX. Effect on Deception of the Mention of Deity . . . 373

LXX. Self-Correlation of IER, Speed, and Coördination Tests . 381

LXXI. Intercorrelations among Deception Tests of the Same Type 382

LXXII. Average Correlations between Single Tests of Different Techniques 383

LXXIII. Motives Given by Children for Cheating 394

FIGURES

FIGURE PAGE

1. Voelker's Cardboard Test 40
2. Cady's Trustworthiness Test 41
3. Histogram Showing Graphically the Distribution of Honest Differences in Arithmetic Scores on Two Occasions 70
4. Histogram Showing Graphically the Distribution of Differences between Honest and Dishonest Arithmetic Scores 71
5. Comparing Test Results When No Answer Sheet Is Used on Either Day with Results When Answer Sheets Are Available on the First Day 71
6. Properties of the Normal Curve 74
7. Per Cent Cheating on IER Tests in Two Typical Groups, One Especially Dishonest and One Especially Honest 118
8. Graphic Distribution of Typical Amount Scores on IER Tests . 118
9. Per Cent Cheating on Speed Tests in Typical Groups, One Especially Dishonest and One Especially Honest 120
10. Graphic Distribution of Typical Amount Scores on Speed Tests . 121
11. Illustrating a Correlation of + .93 162
12. Illustrating a Correlation of + .49 163
13. Illustrating a Correlation of + .21 164
14. Age-Sex Differences on IER School Tests in Terms of Per Cent Cheating at Each Age Level 169
15. Summary of Age-Sex Differences on IER School Tests . . . 170
16. Summary of Age-Sex Differences on Speed Tests 171
17. Summary of Age-Sex Differences on Coördination Tests . . . 173
18. Age-Sex Differences on Puzzle Tests 174
19. Summary of Age-Sex Differences on Athletic Contests . . . 175
20. Age-Sex Differences at Parties 176
21. Summary of Age-Sex Differences on the SA Lying Test . . . 177
22. Summary of Age-Sex Differences on IER Home Test . . . 178
23. Age Differences in CT Ratios 179
24. Per Cent Cheating on IER School Tests at Each Level of Intelligence (CAVI) 183
25. Per Cent Cheating on Speed Tests at Each Level of Intelligence (IQ) 184
26. Per Cent Cheating on Coördination Tests at Each Level of Intelligence (IQ) 184
27. Per Cent Cheating on Puzzle Tests at Each Level of Intelligence (IQ) 185
28. Per Cent Cheating on Athletic Contests at Each Level of Intelligence (IQ) 185

FIGURE PAGE
29. Per Cent Cheating at Parties at Each Level of Intelligence . . 185
30. Per Cent Stealing at Each Level of Intelligence 186
31. Per Cent Lying (SA) at Each Level of Intelligence 186
32. Per Cent Cheating on IER Home Test at Each Level of Intelligence (CAVI) 186
33. Median CT Ratio at Each Level of Intelligence 187
34. Sims Socio-economic Levels and IER School Cheating . . . 215
35. Sims Socio-economic Levels and IER Speed Tests 215
36. Sims Socio-economic Levels and Home Cheating 215
37. Sims Socio-economic Levels and Intelligence (CAVI) . . . 216
38. Occupational Differences, IER School Cheating 222
39. Occupational Differences, Speed Tests 222
40. Occupational Differences, Coördination Tests 223
41. Occupational Differences, IER Home Cheating 223
42. Occupational Differences, CT Ratio 224
43. Occupational Differences, Intelligence (CAVI) 224
44. Scattergram of Sibling Scores on IER Home Test 236
45. Range of Home Background Chart 238
46. Comparison of Nationalities and Races in Respect to Intelligence and IER School Xi 251
47. Comparison of Denominations with Respect to Intelligence and IER School Xi 255
48. School Differences in Relation of Grade to Deception, IER School Xi 259
49. Mean IER School Xi by Grade 259
50. Mean Speed Xi by Grade 260
51. IER School Xi and Retardation 261
52. Speed Xi and Retardation 262
53. Coördination Xi and Retardation 263
54. IER Home Xi and Retardation 264
55. Deportment and Deception 272
56. Suggestibility and Deception 279
57. Attendance at Motion Pictures and Cheating on IER Tests . . 281
58. Graphic Distribution of H, D, and C Groups with Regard to Handicap Scores 303
59. Comparative Handicaps of H, D, and C Groups 304
60. Per Cent of Cases Cheating on Three Kinds of Tests . . . 315
61. Comparative Deceptiveness of Public and Private School Children from the Same Socio-economic Level and of the Same Intelligence 316
62. CT Ratios, Populations L and M 318
63. Mean CT Ratio of Each Occupational Level for Schools L and M . 319
64. Mean Xi Cheating Scores of Adjoining Rooms of Three Schools . 325
65. Cheating of X and Non-X Boys in School C 340
66. Relation of Rank in X to Deception Ratio of Boys in School C . 341

FIGURE PAGE
67. Per Cent of X and Non-X Children Cheating on Home Test . . 345
68. CT Ratios of X and Non-X Children, by Sex 345
69. CT Ratios of X and Non-X Children, by Grade 346
70. CT Ratios of X and Non-X Children, by Grade and Sex . . 347
71. CT Ratios of Grade Four 347
72. Relation of Cheating on Home Test to Length of Membership in X 348
73. Relation of Cheating on All Tests (CT Ratio) to Length of Membership in X, School Ax 348
74. Relation of Cheating on All Tests (CT Ratio) to Length of Membership in X, School Bx 349
75. Relation of Per Cent Cheating on Home Test to Rank Achieved in X 349
76. Relation of Cheating on All Tests (CT Ratio) to Rank Achieved in X, School Ax 350
77. Relation of Cheating (CT Ratio) to Rank Achieved in X, School Bx 350
78. Relation of Cheating on All Tests (CT Ratio) to Rate of Advancement in X 351
79. Relation of Per Cent Cheating on Home Test to Rate of Advancement in X 351
80. Mean CT Ratios of Schools Ax, Bx, B, C, and D 352
81. Per Cent of Y's Cheating on School and Home Tests, as Compared with Whole Population of School C 364
82. Per Cent of Y's Cheating on School and Home Tests, as Compared with Whole of Population A 364
83. Raw Deception Scores of Boys Belonging to Y and to No Organization 365
84. Deception Scores of Y's, Members of No Organizations, and Members of Organizations Other than Y 365
85. Deception and Rank in Y 365
86. Deception and Length of Membership in Y 366
87. Deception and Rate of Advancement in Y 366
88. Changes in Coördination Test Scores during Three Weeks' Intensive Teaching of Honesty 370
89. Changes in Speed Test Scores during Three Weeks' Intensive Teaching of Honesty 371
90. Probable Significance of the Differences in Deceit between Maller's Groups on Tests 1 and 2, 3 and 4, and 5 and 6 375
91. Amount of Cheating on Coördination Tests 382
92. Amount of Cheating on Speed Tests 383
93. Amount of Cheating on Different Deception Tests 384
94. Distribution of CT Ratios 386
95. The Scaling of Attitudes Associated with One Form of Deception . 389
96. Relation of Cheating to Test Ability, IER Completion Test . . 396

INTRODUCTION

STUDIES IN DECEIT

INTRODUCTION

THE SCOPE AND METHOD OF THE INQUIRY

The Character Education Inquiry was undertaken by Teachers College at the request of the Institute of Social and Religious Research. From the beginning there has been the most generous regard for the freedom of the investigators. Beyond defining in a general way the major field of study, no stipulation was made as to the problems to be attacked or the techniques to be used. We were asked to undertake a basic research and were left free to determine its nature and scope. Very wisely, however, a group of advisers was provided to which we could present our plans for appraisal at any stage of the enterprise.

We began in the fall of 1924 with two immediately practicable projects — a study of deception, and a beginning in the use of tests of moral knowledge and attitude. Our hope was that in executing these projects we might learn something of the possibilities of research in the highly intangible field of character study, and could mature plans for the entire period. They proved to be admirably adapted to these purposes.

In connection with these preliminary skirmishes it was necessary to make a thorough review of character testing, and a more cursory examination of other methods of studying the problems of moral and religious education. We found, as was to be expected, a disheartening lack of *method* in research, and became increasingly convinced that the best contribution we could make in the time at our disposal was precisely at this point.

This field of work may be seen in perspective as section five of the following classification of various approaches that might be made to the study of education for character:

- I. Philosophical-psychological research concerning personality, society, growth, and, more specifically, the nature of character and the process of its formation
- II. Historical research regarding
    - A. *Theories* of character from the standpoint of modern psychology and social science
    - B. Comparative study of historic *methods* of developing character
    - C. Evaluation of methods of measuring character
- III. Surveys, including more particularly
    - A. Critical examination of current methods of moral and religious education
    - B. Critical study of contemporary character in all its aspects, as exhibited in population groups distinguished by age, mental age, sex, location, standard of living, education, denomination, etc.
- IV. Experimental control of specific processes of moral and religious education for the purpose of discovering and formulating improvements in method
- V. Methodology. Research in the technique of research, or the creating of the tools for carrying on the above inquiries. The following research methods are being used in the study of character, but all of them need refinement and standardization as a necessary condition of thoroughly scientific work:
    - A. Biography and fiction
    - B. Observation
    - C. Questionnaire methods
    - D. Case histories
    - E. Rating methods
    - F. Testing and measurement
    - G. Analysis
    - H. Laboratory experimentation

REASONS FOR THE APPROACH CHOSEN

We were brought to our decision to make methodology with special reference to testing and measurement our primary interest by several considerations. In the first place, circumstances imposed certain natural limitations. Originally planned for a three-year term and subsequently extended to five years, the investigation had to be confined to such problems and methods as gave promise of results within the time allotted. The historical antecedents of the research, as outlined by Mr. Fisher in the Foreword, suggested the further limitation of the study to problems which were of concern to leaders in the field of moral and religious education. In view of the fact that many researches were being carried on in the same field, we felt that it was particularly important not only to avoid duplication of effort but also to undertake a genuinely basic study. The experience of the investigators set further practical boundaries to the ground that could be covered.

In the second place, many facts pointed to testing and measurement as the most strategic point of attack. Not only is this relatively neglected approach basic to any fresh scientific research into the nature of character and its manner of growth, but studies of the relative value of current methods of moral and religious education and experiments to discover improvements in technique depend to a degree rarely appreciated on the availability of ways of *measuring results.* Theories of ethical training, furthermore, suffer from lack of data concerning the causal concomitants of specific behaviors and attitudes, and plans and programs are produced by the score which have no experimental basis and which are as likely to damage character as to improve it. Hundreds of millions of dollars are probably spent annually by churches, Sunday schools, and other organizations for children and youth with almost no check on the product — a negligence of which no modern industry would be guilty, and which the public schools have rather generally outgrown so far as routine school work is concerned. Nevertheless, although tests exist for predicting success in particular school studies, in school work in general, and in various occupations, which have real value in saving the time of individuals and the money of the school system, yet there are no tests for predicting success in living. For lack of them a vast amount of time and no one knows how much money are probably thrown away on expensive and intricate devices for moral and religious education, and on more or less futile attempts to live well in a world whose problems people are inadequately prepared to meet.

In the third place, there was available to us for measuring social behavior the experience in the building and use of achievement tests accumulated during the last twenty-five years.

We were not unaware, of course, that individual case study had been developing a distinct methodology during the same period and offered an attractive alternative to the statistical approach. Indeed, the clinical method demanded all the more serious consideration in view of the fact that, in contrast with the testing movement, it had been almost wholly absorbed in problems of personality and character.*

In spite, however, of the demonstrated value of the clinical approach, we were not deflected from the path of extensive testing and statistical interpretation. For one thing, the investigators were not trained in the field of clinical psychology and case work, whereas large numbers of highly qualified persons on ample foundations were already engaged in this type of research. Moreover, it is difficult to secure adequate contacts with normal and well-adjusted children in ordinary clinical work. In the third place, case studies, no matter how complete and informing regarding the individual, require an enormous expenditure of time and money in order to provide an adequate basis for the generalizations that must be made concerning human conduct if methods of moral education are to be developed which will be serviceable to the majority of children. Only by building a broad foundation of statistically usable data can the science of human behavior as distinct from the art of studying and improving individuals be developed.

---

* Churches and schools both are enormously indebted to the child guidance and mental hygiene clinics, which not only have seriously undertaken to repair the damage done to the personalities of children by life in oppressive, hostile, or degrading environments, but have also pointed the way to school, home, and community conditions which would in practice be more likely to achieve the results in character which the schools and churches have so long been proclaiming as their chief concern.

But clearly both approaches are needed in a well-rounded study of character, for they supplement rather than duplicate each other. The methods of statistical research might profitably be applied to case studies themselves, now that such large numbers of these have been piled up in the files of hospitals, schools, courts, and mental hygiene clinics. And any extensive test program or educational experiment, on the other hand, will need the constant check-up of intensive work both for the validation of test procedures and the adaptation of methods to individuals.

CLASSIFICATION OF PROBLEMS

Inasmuch as our study seeks to throw light on the nature of character by uncovering fresh empirical data rather than by reworking data already familiar, we have avoided the premature formulation of definitions. Our only assumption concerns the location of the object of study. We are interested in the social functioning of children. And by this we mean that we intend to study social behavior in relation, on the one hand, to the ideas, purposes, motives, and attitudes entertained by the individual, and, on the other hand, in relation to the group life within which the observed and tested behavior takes place, including both the systems of behavior or customs of the group and its codes, ideals, and purposes. Furthermore, we think of behavior as a function not only of the group but of the self which is becoming enlarged and organized within itself as well as integrated with its groups in the processes of social interaction which are being studied.

For convenience of reference, therefore, we may classify our work as involving the following areas of interest:

1. Mental content and skills — the so-called intellectual factors
2. Desires, opinions, attitudes, motives — the so-called dynamic factors
3. Social behavior — the performance factors

4. Self-control — the relation of these factors to one another and to social-self-integration

The first three items are abstractions from the unitary process of social experience mentioned in item four. This is the concrete reality we hope to measure, but for practical purposes it has seemed best to approach it in a somewhat piecemeal fashion, much as a doctor examines the composition of the blood, the reflexes, skin color, and so forth to aid him in making a diagnosis of the individual as a whole, even while recognizing that blood count, taken by itself, is a relatively insignificant fact.

With methodology finally selected as our field of research, particularly as involving tests and measurements, a plan at once became necessary which would insure a practicable and rewarding development of the Inquiry. The master key to such a plan was found in the simple proposition that techniques for research should be worked out in actual service as instruments of research in order that their availability for this purpose might be continually tested in the exigencies of their application to actual problems. Since the general problems had already been classified as in the outline given on page 4, the plan of study grew very naturally into the following organization:

I. Primary study. The development of a large body of highly standardized test material for the measurement of a wide variety of achievement in the field of morals and religion. Such test material would probably at first need to be classified as

A. Tests of knowledge and skill
B. Tests of attitude, opinion, and motive
C. Tests of conduct
D. Tests of self-control

II. Secondary studies. These might be carried on separately or simultaneously in such combinations as circumstances might determine.

A. The interrelations of conducts, knowledges, attitudes, and opinions among themselves — the problem of traits

B. The biological and social concomitants of conducts, knowledges, attitudes, etc. — the problem of causes and significance

C. The results of current educational techniques purporting to develop character or certain habits and ideas — the problem of efficiency

D. Brief experiments with large populations and limited objectives and various techniques — the problem of method as applied to habit formation

E. An extended experiment with a small group for a period of years with frequent retesting — the problem of comprehensive method in character education

F. The observation of a large number of children by the most refined techniques available for discovering facts relevant to moral and religious growth, both individual and social. Such observations should be continued through not less than ten years and preferably from birth to occupational independence or even through life. It should include the social and biological background, the physiological and social history, and the results of repeated tests and measurements. The accumulation of such cases in large numbers, if properly selected, would afford a basis for statistical study of character comparable to that now available for the study of certain diseases and in general of the physical sciences. It is assumed that such individual studies would be socially conceived, and that along with the individual observations there would go a careful analysis of the experiences of the various groups to which the individual belonged, and of the individual's actual functioning in these groups.

G. Careful laboratory experiments in the field of physiological psychology to determine the laws governing the relation of ideas, bodily conditions, dispositions, and attitudes, particularly in the field of social relations. Such studies should reveal significant facts concerning the nature and function of the self, the limits of self-control and the procedures for achieving such control as is possible, and the processes of social interaction, such as discussion, dispute, study, preaching, worship. Incidentally much would be learned concerning the relation between health and mental states, which would be of first importance in a program of character education.

The work of the Inquiry has centered chiefly on the primary study and on the first three of the secondary studies. In every case only sample studies have been possible, as the complete realization of the program outlined would require many years.

CHOICE OF SAMPLE STUDIES

In choosing the particular conducts, knowledges, opinions, attitudes, and the like to be investigated, we have been guided largely by practical considerations. In view of the lack of scientific knowledge of the nature of character, it would have been most defensible to take random samplings of conducts, skills, ideas, and so forth, since it would be obviously out of the question to measure the entire range of social behavior. We have not selected our subject matter in this way, however. In spite of the absence of scientific treatment, the subject of morals and religion has probably received as much attention from some of the keenest minds of all generations as any other human interest, so that we are not left without any guidance at all, but have on the contrary a great wealth of careful and wise analysis of character which may be used to suggest the particular behaviors and mental contents that are of most importance.

Following the lead of recent curriculum studies, it might have seemed best to further limit our selection to *failures* in adjustment, just as a spelling lesson should focus on misspelled words and not waste time on words already known. Successes are achievements and require no further effort at learning. If the causes of failures can be ferreted out and the failures themselves be prevented, a long step forward will have been taken in moral education. One such failure with which our whole social structure is honeycombed is the practice of deceit, and it is with this that our first sample study, reported in this volume, is concerned.

But successes are also important for study, for if the causes of highly successful social behavior can be discovered, they can probably be produced at will and so be organized into a curriculum of character education. Sample studies in this direction will appear in later sections of the report.

Studies in Deceit includes as much as possible of the subtle interrelations between behavior and knowledge, opinion and attitude, but is incomplete at this point in view of the practical limitations of a single volume and the need of concentrating in a subsequent section the various problems related to the organization of the self which it has been possible to study in the course of the Inquiry. The reader is asked, therefore, to remember that, while it is necessary to study deceit objectively as *behavior* which can be observed and measured, there is in this no implication that this behavior, apart from its causes, consequences, and other concomitants, has any significance. We hold no brief for absolutism in morality or psychology, which in either case tends to attribute to isolated acts some mystic meaning other than may be found in the entire train and system of experience of which the act is an inseparable part. No progress can be made, however, unless the overt act be observed and, if possible, measured without any reference, for the moment, to its motives or its rightness or wrongness. The first question to ask is, What did the subject do? Until this question is answered in quantitative terms so that what he did is clearly known, there is little use in going on to ask why he did it, and still less use in speculating whether he is to be blamed or praised.

VALUES AND LIMITATIONS OF THE TESTS USED

The material used in the techniques developed by the Inquiry always has value for the subject quite apart from its significance as material for character testing. The situations in which the children are placed are natural and wholesome situations. It is the way they handle themselves in these situations that constitutes the test of character. An examination in arithmetic or spelling, for example, is a good thing and time well spent, in addition to what one may learn from it concerning the tendency of a child to deceive in taking it. Athletic contests and parties, works of mercy and helpfulness are in themselves significant and valuable for the children over and above what the examiner may learn about their honesty or capacity for self-denial. This fact makes possible the conscientious use of these procedures in spite of the need of keeping the subject in ignorance of those aspects of the test which make it an instrument for measuring some aspect of character as well as knowledge or skill or speed. It does not protect the tests from misuse, however, or from fatal publicity. Only the utmost precaution and restraint can insure the confidential conditions essential for successful testing.

This constitutes a serious limitation in the usefulness of character tests. It would be a fine thing if a technique could be invented which could be administered with its entire purpose known to the subject as well as to the examiner, so that the one who gave the test could say, " This is a test of honesty," or " helpfulness," or what not, without interfering with its operation ; and it is quite probable that, when an entire series of tests covering the various forms of behavior, knowledge, opinion, and attitude needed for a complete picture of character is available, it may be practicable to call it a character test without vitiating the results. Meanwhile it should be kept constantly in mind that what we have reported so far is not such a test of character as a whole, but separate tests of one type of behavior, and that at the stage of development represented by this volume these should be used only for purposes of research.

The promoters of the Inquiry have no desire to restrict the use of the materials referred to in this report. Certain of the tests described have been copyrighted, but, once published, no ideas or suggestions as to techniques could be withheld from general use. It is hoped, however, that only persons seriously interested in research and qualified by experience will attempt to apply the techniques discussed. It will of course be recognized that the conduct of any experiment requiring double testing will require the most rigorous control of the entire situation to avoid betrayal of the purpose of the tests. In this respect character testing differs widely from intelligence testing and must be handled in an appropriate way.

THE FORM OF THE REPORT

Although the general problem of how to measure character is of widespread interest, the technical problems encountered make the preparation of a readable report exceedingly difficult. The plan adopted for this first study provides for a simple statement of our methods and main results in Book One, and the gathering of all statistical discussions and tables in Book Two. Although Book Two is large, it has not seemed wise to separate it altogether from Book One, as it is of the nature of a supplement which will require the reading of Book One to be intelligible and to which all who are interested in the technical phases of the research will wish to refer constantly.

Where statistical terms are used in the description of general methods and results, they are carefully explained so that no one need hesitate to read Book One because he feels unfamiliar with the terminology of quantitative research.* Even so, certain of the basic ideas may seem a little difficult at first, inasmuch as most of us have not been in the habit of thinking about the more subtle and inaccessible aspects of human nature, like honesty and kindness, in quantitative terms. In asking constantly how much or how often, we are not in the least belittling the spiritual significance of any kind of behavior. We are merely drawing attention to its prevalence.

Again, many may find it hard at first to substitute for classical logic the more empirical logic of scientific thought. The answer to the question, "How much?" or "How often?" is generally in terms of probability. Instead of dealing in hard and fast categories by which all cases are carefully pigeonholed in one or two or, at most, a few, clear-cut classes, such as honest, dishonest, helpful, self-controlled, we endeavor to indicate the proportion of life situations in which any individual or group would probably act honestly, dishonestly, helpfully, or with self-control. Since this proportion may fall anywhere from zero to one hundred per cent, the classification of our subjects as honest, dishonest, and the like would be quite arbitrary and of no possible service.

---

* The footnotes of Book One are intended for the technically trained reader.

Similarly, we avoid using such terms as " good " or " bad " or even raising any questions of this kind, since the line between good and bad is one which our tests will not automatically draw. The test records the act, but judgment of merit or demerit must be rendered on grounds which the test alone does not reveal.

Our matter-of-fact statements and records of what our subjects do are to be credited not to any lack of interest in their moral welfare but to the conviction that the solution of moral problems requires the same objectivity in the approach to facts as has been found necessary and fruitful in the study of physical events.

GENERAL CONCLUSIONS

Our primary studies have resulted in the development of a large battery of deception tests, of which twenty-two use ordinary classroom situations, four use an athletic contest, two are in parties, and one is work done at home. There are also two lying tests and two stealing tests. These situations are intended as samples of the sort which it would be necessary to use if a complete picture of a person's tendencies to deceive were to be compiled. Similar tests can be prepared if any occasion for them should arise, but what we have are adequate for the type of research represented in the first five of the secondary studies.

This volume will report on the first four of the secondary studies, but only in so far as actual conduct was involved. The problem of the relation of conduct to knowledge and attitude will be discussed in a subsequent volume.

We find that one form of deceit or another is definitely associated with such facts as dullness, retardation, school grade, emotional instability, socio-economic handicaps, cultural limitations, certain national, racial, and religious groupings, suggestibility of a certain type, frequency of attendance at motion pictures, and poor deportment at school.

Deception runs in families in about the same way as intelligence, eye color, or height. This does not prove of course that deception is inherited, but only that certain things are found together.

Deception also goes by gangs and classrooms. A pupil resembles his friends in his tendency to deceive.

Where relations between teachers and pupils are characterized by an atmosphere of coöperation and good will, there is less deception, and to this effect the general morale of the school and classroom also contributes. On the other hand, attendance at Sunday school or membership in at least two organizations which aim to teach honesty does not seem to change behavior in this regard, and in some instances there is evidence that it makes children less rather than more honest.

Honesty appears to be a congeries of specialized acts which are closely tied up with particular features of the situation in which deception is a possibility, and is apparently not greatly dependent on any general ideal or trait of honesty. Motives for cheating, lying, and stealing are highly complex, and are specialized just as are the acts of deception. The most common extraneous motive is the desire to do well in class.

Deceit as a social problem can probably best be tackled by controlling the child's major experiences in such a way as to make deception unnecessary and by building up a series of behavior habits characterized by integrity of performance and intelligent grasp of the social significance of honor. As an individual problem, honest conduct is just one aspect of the total character of the child and has no real significance for his moral welfare apart from its relation to his self-organization.

BOOK ONE

GENERAL METHODS AND RESULTS

PART I

The Problem of Measurement

CHAPTER I

DECEIT AS AN OBJECT OF STUDY

Deception is a symptom of social friction. That it has long been a matter of interest is evidenced by the fact that Roget's *Thesaurus* prints no less than eight hundred words and phrases which are intimately related to the concept. But the practice of deception is far older than language. Enos Mills in his book *The Grizzly* describes the cleverness with which this much-hunted creature eludes his pursuers and gets the better even of his own kind. A grizzly cub was once observed chewing a ham skin. Seeing a larger bear approaching perilously near, the cub proceeded to sit on the skin and gaze with apparent absorption at something going on elsewhere. Such an instance of getting around the other fellow could be duplicated by the score from observations of animal life, both wild and domestic.

The human young are no less prone to use indirect methods of securing their ends. Being equipped with more complex brains, they are naturally more adept than their animal friends; yet one often sees in the innocent expression of a child the very same struggle to keep something dark that one finds in dogs and cats — and, if one could only believe Uncle Remus, in rabbits!

One of the most interesting episodes of the history of character is the transition from this natural state of universal deception to a social order whose very foundation is its negation. It is not our purpose to trace this history. We begin at a time when it is generally claimed in most countries that it pays to be honest. That is, life goes along more smoothly, take it by and large, if everyone can be trusted. Here and there the ideal of honesty, in theory at least, has been developed on a basis of social-minded regard for the personalities and the rights of others, though there are not so many who have actually achieved integrity of this character as there are of those who usually practice honesty because to do so is the best, that is, the safest, policy.

But how many of even these prudent ones are there?

In spite of this obeisance to the ideal of honesty, we are confronted with the extraordinary spectacle of a civilization whose institutions are founded upon the assumption that men can trust one another — a civilization whose codes of business, of personal relations, of religious experience, of military, political, and professional service everywhere lift up honesty as essential to the common weal — nevertheless exhibiting in every walk of life, in school, industry, the professions, in business, politics, religion, and private life, the most blatant use of fraud not only for ends disapproved by public ethics but even for objects which are in themselves entirely wholesome and are frequently sought by legitimate means.

This conflict between standard and performance reflects the early struggles of children with an oppressive environment. Born with budding desires which if carried out in their crude form meet the prohibitions and penalties of hostile custom, the youngster who wants his own way must use his imagination. A twenty-months-old boy greatly enjoyed playing with several forbidden objects. Although never punished for doing so, he was aware of the parental wish which contradicted his own. His first effort to circumvent the prohibition was to say, "Daddy, go 'way!" — thus to leave him free to carry out his desire. As this did not work, he soon tried this more subtle method: "Daddy, go hide. Boy find!" — thinking to entice his father to leave him alone for a moment. He was a perfectly good sport when he discovered that this, too, was "no go." Later he resorted to ways of getting at the forbidden object when no one was near but was so very quiet about it that the unusual silence at once gave him away and brought a suspicious parent to the door. A further variation that developed a month or more after this method came into use was to attempt to attract attention to some other object than the one in dispute. Having a match in one hand, this same youngster one day put this behind him as his father approached and said, " Daddy, come here," at the same time holding up for inspection an innocuous piece of paper. This method was still being experimented with after two months of comparative failure.

This boy did not do these things because he possessed some inherent tendency to deceive, nor was he in conflict with some inborn disposition to be honest. He was merely acting in an intelligent way to solve a new problem — the circumvention of social obstruction. If the methods he very naturally used had succeeded and been repeated with continuing success, then he would have been achieving the behavior to which the term *deception* might properly apply, for whether it was the *end* he sought which was disapproved or the *method* he used which was frowned upon he would soon have become conscious of his method as a way of circumventing the will of another by misleading the other as to his own will. This seems to be the essential factor in deception. Although it is a natural, intelligent response to a thwarting social situation, it leads inevitably to a break in fellowship and the intensification of the social strain or friction out of which it arises.

That such adaptive behavior is learned very early everyone knows. It is first learned in those situations where it constitutes the most successful solution of the problem of getting one's own way. Frequently the easiest solution, it is at times an exceedingly arduous one. The selective force working for its continuation and spread is simply success.

Now if deception as a mode of adaptive behavior is so readily acquired when the whole environment frowns upon the method as well as the end to be achieved, what can we say of those situations where the child's dominant group actually approves this way of gaining his ends when he is in conflict with some other group?

In many a school classroom this is precisely the situation. Honesty is bad form. It would be surprising if in such circumstances we should find anything but habitual deception wherever it proved to be the successful policy. And this is exactly what our studies tend to show.

When deception is found to be the way in which an individual usually adapts himself to a situation, we can be fairly certain, then,

1. that what he wants to get or to do is disapproved and must be concealed; or
2. that when the thing he wants is legitimate, straightforward ways of getting it are either more onerous or less adequate or have never been learned; and
3. that even if deception is disapproved by the group within which the behavior occurs, it is approved by some other group to which the individual belongs in fact or fancy; or
4. that the individual is mentally disordered and must resort to self-deception of some kind to maintain his self-respect — such as the adoption of ingenious excuses, or telling himself that it won't count this time, or finding justification in other ways.

It may be further assumed for the time being that the amount and character of the deception are primarily functions of the situation. That this assumption is borne out by the facts we shall see later; but it is stated here, along with the four propositions just given, in order to emphasize the need for studying the behavior involved in deceit. We cannot, of course, question the importance of studying also the motives and ideals, but we need first of all to establish the fact of deception and its amount and character. As these are symptoms of the social disease, they must be accurately observed if a correct diagnosis is to be reached. With the disease thus partially located, its constituent elements may then be studied and an effort made to find its causes and cures.

These figures of speech drawn from physiology will not blind us to the fact that we are dealing with areas of behavior that are more open to social and mental influence than most organs and tissues of the body. The cure will probably turn out to consist in two major processes: first, the removal of the original conflict or strain between the child and his environment and, second, the replacement of the old habit by a new one. There will doubtless be cases in which the first will be sufficient. Once a satisfactory social adjustment is secured, the dishonest habits will be abandoned. There will be other cases in which the second process will be sufficient. That is, even if the social strain is not removed, new habits of honor may be formed. Without changing the major situation itself, an educational approach can be made which will so modify the habits as to affect an adjustment to the situation as it is. The processes in each case are complex and are not to be discussed at this point. But it may be suggestive to refer briefly to types of strain that are met with.

SITUATIONS PROVOCATIVE OF DECEPTION

In Healy's discussion of honesty,* which is an inquiry into the causes of juvenile offenses against property based on his personal observations of a large number of cases, we find helpful material for the study of deception. Concealment was inevitably involved because of the disapproval of stealing, which requires that the person taking property belonging to another work by stealth or else hide himself afterwards.

This, of course, is a modern limitation upon primitive tendencies, illustrating very well the relative success with which society has achieved the dominance among men of the ideal of trustworthy behavior, which asserts and maintains that might does not make right. But the underlying motives to concealment are the same to-day as in the past. Our primitive ancestor, to be sure, had to conceal his depredations out of fear of those physically stronger than himself, whereas modern man conceals his thieving out of fear of the forces of law and order which society has developed for its defense.

Children are more nearly on the primitive level in the matter of the object of fear. Direct punishment for taking things belonging to other children is apt to be meted out by the offended individual in person and at once. Even in adolescence the policeman is often looked upon as a personal enemy rather than as a social agent, and in the same class with the policeman are parents, teachers, and adults generally. From his crowd or gang the child frequently has social support and is admired for his exploits. His attacks, whether conducted in groups or alone, are sometimes the result of greed but are more often the consequence of the desire for adventure. But whatever the motive for the theft, the motive for the accompanying and essential deception is always the fear of detection. The break between the child and society is as much determined by the necessity of lying as by any material damages resulting from thefts. Ostracism by society for thefts is bad enough, to be sure, and has serious psychological consequences. But it is physical separation primarily. The offender is imprisoned, and everyone knows what for. His concealment of his acts is at an end for the time being. On the other hand, the person who is deceiving others is cut off from them psychically rather than physically and even while going about his daily occupations may be far more removed from genuine personal contact with those whom he is deceiving than the captured thief from his captors. This double life hampers the development of an organized self more than does antisocial behavior which is kept in the open.

---

* Healy, William, *Honesty*, Bobbs Merrill, 1915.

The deceptive accompaniments of theft are not Healy's main concern. But for our purposes, his study of the motives underlying stealing are illuminating. This is particularly true in drawing attention to the fact that the situation in which the child is placed is the determining factor in his behavior. A child steals ordinarily to get something normal and worth-while with which his environment has not provided him. Poverty becomes thus a primary cause. But poverty as an effective cause is often a misfortune in well-to-do families as well as in poor ones if parents do not see to it that their children have the playthings, amusements, and clothes which not only satisfy the need for fun and self-expression but which also afford entrée to the social groups natural to the child. The practice of snobbery is doubtless learned from adults, but the resulting social ostracism of the youngster who is not equipped for the activities of his normal groups is a vigorous stimulus to get by hook or crook the things that will offer him a satisfactory social status.

There are, of course, numerous other causes of theft, such as running with a crowd and being overborne or carried away by excitement, being overtempted by the exciting opportunities of amusement parks and movies, associating with delinquents, reacting against unwholesome home conditions, being deliberately taught by adults, the example of parents careless with money, and many others. There are also abnormal conditions which, because of a vivid experience in which stealing has been in some way associated with some other malpractice, find expression in irresistible impulses to steal. From the standpoint of the Inquiry, however, thieving is a form of dishonesty in which we are interested primarily because of the inevitable deception with which it is accompanied. What methods are taken to conceal antisocial deeds? With what social groups is the break made? With whom is fellowship maintained? What social strains result from the continued necessity for concealment, artifice, and double dealing? Such questions, rather than the cause of the original antisocial behavior itself, are our more immediate concern.

A quite different approach is represented by Charters' book on the teaching of ideals.* The problem of honesty is taken up in one section to illustrate a method of teaching. Here Charters deals not so much with maladjustments accounting for dishonesty as with types of situation in which honesty is likely to be an ethical problem because the dishonest response is so safe and rewarding.

A group of thirty teachers studying how to teach ideals made a detailed classification of situations to which honesty was the ideal response, and which constituted therefore opportunities for dishonesty. These situations were concerned with: money; statements; promises; social relations; rules, directions, and orders; games; property; class recitations; examinations and tests;

---

* Charters, W. W., *The Teaching of Ideals,* The Macmillan Company, 1927.

and preparing lessons. Under each heading a long list of specific situations is given, such as the following, which have to do with money:

1. You borrow money.
   Someone says, "I know I owe you some money, but I have forgotten how much."
2. You find money.
   You know to whom it belongs.
   You know you will not get a reward for returning it.

There are nine of these major situations involving money, with some fifty-seven minor situations constituting the problems. The other general classes of opportunity are treated in the same way, issuing in a total of nearly two hundred fifty opportunities to deceive or be honest. This list could doubtless be amplified almost indefinitely, but it shows how complex our social situations are and how detailed our educational processes must be if they are to result in adequate control in the interest of fair dealing.

THE PROBLEM OF CORRECTION

The illuminating work of men like Healy, who have brought to public attention the sort of situation with which dishonest behavior is associated and the frequency with which the practice of dishonesty drops out of use as soon as the social strains are released, offers us a more encouraging prospect for educational procedure than the one that looms before us when we contemplate the building of hundreds of specific habits involving the honest rather than the dishonest type of response. Yet we cannot afford to ignore the fact that the easily reformed offender who drops his bad habits had also to learn his good habits at some time. If he slips easily into good behavior, the presumption is that his bad behavior was a fall from grace, a shift from habits of honest response already learned. Certainly no one questions that the habits and skills of dishonest behavior have to be learned. Naturally, when these prove unprofitable or dangerous and the old honest ways are still available, the old are resorted to once more. They are not achieved with a miraculous suddenness. They are learned just as all other detailed habits are learned, but as is the case with other habits, they are learned far more readily and effectively when there is present an adequate motive for learning them and an adequate concept or picture of the end to be achieved and the general character of the means to be employed.

Methods of replacing old habits by new or of originating the correct, that is, the honest, types of response are age-old. Most of them are based on the assumption that honesty is not only a generic concept but a generic trait. It is supposed to be present in the child in the form of a ready-made force or mode of behavior requiring only to be evoked by precept, threat, or reward. The method is prolific of wise sayings and moral cautions, but as a means of producing universal honor among men we certainly cannot boast of its success. We need not be surprised at this, however, if the underlying assumption proves to be itself fallacious. If there be no generic trait of honesty to be evoked, then it is to be expected that the multitudinous ways of evoking it will fall short of their object. As our study proceeds evidence will be accumulated which we hope will throw some light on this fundamental problem.

CHAPTER II

PREVIOUS EFFORTS TO MEASURE DECEPTIVE CONDUCT

The detection of fraud has been of almost universal interest. The large rewards made possible by deception have tended to the development of a high degree of skill in the concealment of motives, intentions, and acts. With more primitive peoples it was only by the building up of a vigorous taboo that the rapacity and lust of the individual could be controlled. Furthermore, the taboo served not only to deter but also to detect, for in the ordeals imposed on the members of the tribe by the witch doctor it was the offender's consciousness of having violated the sacred code that gave him away.

Two of the modern methods of detecting deceit depend for success on the same sensitiveness of the individual about being caught. One is often called the free association method. The other makes use of various physiological tests.

A third procedure has depended on the breaking down of the barriers between the offender and those responsible for his conduct. Fear breeds deceit and raises up an almost impenetrable veil behind which the true self hides. In dealing sympathetically with young people who conceal their real motives and acts, certain juvenile court judges and social case workers have been wonderfully successful, and their general procedure is recognized as of scientific as well as human interest.

The fourth method concerns itself with the measurement rather than with merely the detection of deceptive tendencies and works without the knowledge of the subject. No barriers are erected between the subject and the examiner which require expert handling. Ordinary situations are used, and statistical methods are employed in the interpretation of the results.

In this chapter we shall review briefly what has been done with the first three methods and shall make a complete review of the fourth. A bibliography of methods one, two, and four will be found in the Appendix.

THE FREE ASSOCIATION METHOD *

As has been suggested, this method arranges for the subject to "give himself away." A list of words is presented to him, and he is asked to give the first word that comes to his mind. Most of the list have no reference to the offense of which the subject is accused. A few "critical" words are inserted, however, which have some obvious association with what happened or with the place where the crime was committed.

If the accused is innocent, he will presumably respond as quickly to the critical words as to the rest and the words he thinks of will have no consistent reference to the deed. But if he is guilty, the presumption is that on seeing or hearing the critical words he will be startled into caution and so take time to find a word not associated with the crime, or will be taken off his guard and give a telltale response. The following list will illustrate the latter effect.

Stimulus Words	Innocent Response	Guilty Response
many	more	more
weather	hot	hot
room	hall	hall
second	first	first
tooth	pulled	pulled
treat	soda	soda
head *	hair *	blood *
dress	black	black
knife	sharp	sharp
make	money	money
ship	sail	sail
ax *	handle *	head *

---

* See references 16, 17, 18, 19, 28, 32, 46, 47, and 48 in the Bibliography for detailed discussions.

In this case the crime is supposed to have been committed with an ax and the critical words are starred. The same words might have resulted in a delayed response.

There seems to be good evidence that if there is emotional strain present it will affect the nature of the responses made by the subject, although experimenters have found that different persons behave in different ways, some taking less time rather than more for the critical words and still using caution enough not to give telltale responses.

The Character Education Inquiry has not used this technique as it seems to be essentially a detecting device and not a measuring device. Peculiarities of behavior during the test may be evidence of the attempt to conceal something, but unless this something is otherwise known there results no objective verification of the deceptive intent. That is, the evidence that deception has occurred either in fact or by intent is circumstantial, not direct. Furthermore, this technique does not lend itself very readily to group testing, which, as we shall see later, is a rather necessary requirement of our work.

PHYSIOLOGICAL TESTS *

Breathing, blood pressure, and certain changes in the sweat glands have all been used to detect lying.

A. Inspiration-Expiration Ratio

Irregularities in breathing have long been recognized as accompaniments of emotional condition. The significant fact seems to be the relation of the time it takes to breathe in to the time it takes to breathe out. The average ratio before telling a lie is less than the average ratio after telling a lie. The average ratio before telling the truth is greater than the average ratio after telling the truth.

B. The Systolic Blood Pressure

Here again we have an effort to discover some constant relation between well-known physiological changes and specific stimuli.

---

* See references 1, 3, 4, 5, 6, 11, 12, 14, 15, 21, 22, 23, 24, 25, 29, 30, 31, 33, 34, 35, and 36 in the Bibliography for details.

In this case, as before, the stimulus we are concerned with is the consciousness of deception. It is supposed that when an individual deliberately lies his blood pressure shows a characteristic fluctuation, rising above the point to which fear or anger alone would send it, just before the lie is told, and dropping again as soon as the lie is out. The result, when recorded on a revolving drum, gives what is known as the " lying curve."

Obviously the curve does not indicate the objective truth or falsity of a statement but merely the conscious attitude of deception. A person may in all good faith make a statement which does not correspond with the facts. Such a statement would not show as a lie on the drum. On the other hand, a person might state a fact when he thought he was telling a carefully prepared lie. In such a case the record would appear as a lie.

C. The Psycho-galvanic Reflex

Certain electrical changes take place in the human body which can be measured by delicate instruments such as the galvanometer. The electrical conditions recorded on the instrument alter with other observable conditions in such a way as to suggest the possibility of using the first as an indication of the second when the second are not otherwise known. Thus, emotional excitement is supposed to accompany deception. This excitement may be concealed from the observer by a well-controlled and experienced deceiver. But the electrical changes which accompany the bodily disturbances associated with consciously felt emotion go on just the same and can be detected by the instrument. This is the theory that is back of the use of the galvanometer as a lie detector, but the practical results are not yet encouraging on account of the complexity of the electrical changes that are registered by the instrument.

D. Combinations of Methods

Of the techniques described the three best are association reaction, breathing ratios, and blood pressure. These have been tried out two at a time and all three at one time. The results vary.

Some of the records agree, and on some there is a conflict between the results of the separate techniques. That is, one may indicate that the subject lied, while the other may indicate the opposite.

CLINICAL CASE STUDIES

The case-study procedure is not primarily concerned with detection or measurement and is referred to here only because it frequently makes use of measuring devices as supplements and takes the needed time to become acquainted with associated series of facts about the subject which are quite inaccessible to present methods of testing. It treats the case as a human being living in a complex environment all details of which are significant for a true understanding of his behavior. It spares no pains to discover relevant data about the child's physical and mental condition, his daily regimen at home, his school placement and adjustment, his opportunities for play and self-expression, his relations with members of his family and with his companions.

In its earlier applications the case method (which is really not a method but a principle or spirit) was primarily interested in individuals who had come to public attention because of delinquency of some kind. The most common occasions for arrest or reference to social agencies were lying, stealing, fighting, and sex offenses. It was quite expected that deception would be a factor to be contended with in the handling of individuals, and although no technique was developed for eliminating this obstruction to diagnosis, experienced case workers and judges became extremely skillful in winning the confidence of youthful offenders and so breaking down the barriers of deceit with which they had sought to protect themselves from a too hostile environment.

In more recent years, attention has been increasingly given to that much larger class of children known as potential delinquents. These children have not as yet come to public attention, but they show symptoms of maladjustments which when long continued are found to lead eventually to some open break with society, such as truancy, adventurous thieving, running away from home, abnormal sex activity, or even more dangerous efforts to escape the restrictions of home or school. Mental hygiene and child-guidance clinics have been springing up in numbers of communities, whose purpose it is to get in touch with such cases before they grow to the point of delinquency and by intelligent study of the causes of unrest and by suitable treatment, physical, mental, and social, to effect readjustments much more readily than is possible when antisocial habits have become firmly established.*

Although the study and treatment of children by the case-study procedure is highly developed, its techniques are largely those of medicine and psychology and are applied by specialists in these fields. The "case worker," or field worker, needs to know human nature both in the abstract and concrete and to have a way of getting along with people which makes it natural for them to confide in her. Her work is largely scouting, digging up facts, securing the coöperation of teachers, parents, employers, and club leaders in a program of readjustment which must be well organized to be effective. Such methods as these workers develop to win the confidence of their cases are largely individual in character and conform to no standardized scheme comparable to a test. This does not make them less useful but merely places them in a different category.†

---

* In this connection the work of the Joint Committee for the Prevention of Juvenile Delinquency was of great importance in organizing and stimulating work of this character. Its publications may be secured from the Commonwealth Fund, 578 Madison Ave., New York.

† The oath taken by witnesses in court may be mentioned as a device associated with deception, but its purpose is not to detect falsehood but to prevent its occurrence. Cross-examination, on the other hand, while not conforming to any standardized procedure, is in part intended for the purpose of demonstrating the truth or falsehood of the statements made by the accused or by the witnesses to the case. Such cross-examination even in court sometimes approaches the brutality of the "third degree," which is an under-cover method of extracting confessions by wearing down the resistance of the accused. All such procedures are of course condemned by enlightened people as crude, barbaric, insecure, and bungling substitutes for real skill.

CONDUCT TESTS OF DECEPTION

We come now to the type of work most closely related to our own study. It is not our purpose to assign historical credit for such tests as have been devised nor to offer any extended criticism of work already accomplished by Voelker, Cady, Raubenheimer, and others. The numbers attached to the names of investigators refer to the studies listed in the Bibliography printed in the Appendix.

Voelker's work (44) is of interest because of its pioneer character. He attempted by a series of conduct tests to demonstrate that the effort of the Boy Scouts to teach ideals could be made effective in changes in conduct. Undertaken in coöperation with the Indiana Survey of Religious Education and developed as a doctor's dissertation at Teachers College, Columbia University, Voelker's study has received considerable publicity in popular magazines and is probably familiar to hundreds of thousands of their readers. It has been attended by more critical attention* than has the work of subsequent students, who have succeeded in building better statistical foundations under the structure of character testing, but who have all been indebted to this work for suggestive ideas.

Cady's study (8) was for the purpose of finding out " to what extent it is possible by means of the test method, supplemented by character ratings, observational data, and other aids, to identify in advance of overt delinquency children of abnormal moral tendency." Working on a grant from the U. S. Interdepartmental Social Hygiene Board to Stanford University and under the joint supervision of the University and the California Bureau of Research, Cady limited his investigation to factors involved in incorrigibility, using as his criterion of the existence of this tendency both the ratings of teachers and the presence of children in corrective schools.

Raubenheimer (41) was concerned with the discovery of a method for distinguishing potential delinquents before the stage of actual delinquency. He limited his purpose to group discriminations, feeling that it was too much to hope for the immediate development of ways of measuring individuals which would offer a basis for accurate diagnosis and prognosis. He used public school groups of two types, one the upper twenty-five per cent and the other the lower twenty-five per cent in reliability, stability, and healthy-mindedness, fifty boys from two parental schools for delinquents, and thirty-six boys from a reform school.

---

* See the discussions carried on by Watson, Athearn, and Voelker in *Religious Education*, issues of June, 1925, and February, 1926.

In his study of the character and personality traits of one thousand gifted children, Terman (43) took over certain tests developed by Voelker, Cady, and Raubenheimer, three of which are tests of deceptiveness. These tests were administered both to the selected gifted children and to an unselected control group in order to find whether superiority in character accompanies superiority in other particulars.

We are interested in this review in a detailed study of the *techniques* that have been so far developed and regard it as of scientific interest to summarize and evaluate them before proceeding to discuss our own.

A. The Overstatement Technique

This consists essentially in first asking the subject a question about his ability in some respect or about his knowledge of certain facts, and getting him to make a statement about what he knows or can do. This statement is recorded. A little later he is given an actual test to see if he overestimated his knowledge or ability.

Voelker first used it by asking a single question concerning the subject's school marks: "Did you receive 95 in arithmetic (or some other subject) in your last examination?" The check-up was to ask the question only for some subject in which the grade was below 95. In his second set of tests he used a series of questions concerning abilities and knowledge. The check on the statements about knowledge of facts was made by a retest asking for specific information. For example, one of the questions on the preliminary test is this: "Do you know the names of all the oceans and the continents?" Then on the retest comes this question:

"Name all the oceans." The deception score is the number of failures to make good.

In 1922 Knight and Franzen (20) reported a study which included an effort to measure the tendency of students to over- or under-estimate their qualities. Ratings were used for this purpose. The subject's rating of himself was compared with others' ratings of him and with his rating of others.

Cady used Voelker's technique and some of the same questions on more subjects than Voelker had. Raubenheimer followed with a still longer test.* The procedure finally appearing in the Raubenheimer paper is as follows:

First, there was a short practice exercise to establish an appropriate attitude and to familiarize the subjects with the technique.

Second, two sets of forty questions each were asked, the subject marking his knowledge 2, 1, or 0.

Third, two sets of check questions were administered, the answers to which displayed the extent to which the pupils had overstated their knowledge on the original test.

Results of the Overstatement Technique. Cady found that children who overestimate their ability to do things incline also to overstate their knowledge.† Further, as shown by Raubenheimer, a child who overestimates his knowledge in one test will do it again when another test of the same sort is presented. But at least 120 questions would have to be asked, as against Raubenheimer's eighty, before one could be sure of the percentage of exaggeration one could expect on subsequent trials.‡

We can see therefore that this sort of test may be so constructed as to test *something* very well. But just what is it that it tests? Voelker uses it as a measure of trustworthiness. Cady regards it as a test of deception because the dominating motive seems to be to "put something over." But Knight and Franzen found a general tendency to overrate oneself even when no deception was involved. That there is some relation between this behavior and that complex of conditions called incorrigibility is shown by the fact that the mean score on this test achieved by Cady's group of corrigible or normal boys is significantly lower than that achieved by incorrigibles. The corrigible group made good in 54% of their statements (low enough, in all conscience!) and the incorrigibles made good in 42%.

---

* "Developed," he says, "in conjunction with Dr. G. M. Ruch."

† Cady reports a correlation of .505 between the scores on estimates of ability and scores showing overstatement in regard to knowledge, using ten questions for each. Raubenheimer secures an r of .76 between two sets of forty questions each.

‡ Spearman's formula yields a predicted r of .86 with another set of eighty and of .90 when the test is tripled, or between one set of 120 and another set of 120.

Raubenheimer reports that this test will not distinguish between the highest fourth of a school population and the lowest fourth, highest and lowest meaning the most and least reliable as rated by teachers. But it will distinguish the most reliable 25% of either a privileged or more usual community from a group of reform school boys.

This capacity to distinguish groups makes this a useful test but does not establish the fact of its being a test of deception. Doubtless deception is often, perhaps usually, present. But there is also a large factor of intelligence in the scores.*

Summarizing what we know of this technique: Whatever it measures it will do it well provided there are over 120 items used. It distinguishes a group of delinquents from two groups of non-delinquents, but with only eighty elements it will not distinguish the 25% most reliable from the 25% least reliable in either a normal or privileged group, nor will it distinguish individuals. But whether it tests deception or something like "cocksureness" or tendency to overestimate (though honestly) is not known.

B. Books-Read Technique

This is a variation on the overstatement technique and is reported by Terman to have been suggested by Knight. It consists in submitting to the subject a list of book titles with the instruction that he check the titles of the books he has read. Inserted in the list are several titles of books that do not exist. The question is: How many of these faked titles will the subject check as having read?

---

* Raubenheimer reports an r of .64 with National Intelligence Test scores, which becomes .75 when corrected for attenuation. See his monograph, p. 82.

Franzen (13) embodied the idea in a test for teacher efficiency and reports that in a typical school somewhere in the Middle West one-third of the teachers showed unmistakable signs of dishonesty.*

Raubenheimer " in conjunction with Dr. G. M. Ruch " developed it further and Raubenheimer made it one of his battery of tests. He had two forms of 25 items each, each form containing ten fake titles. The score is the number of such titles checked.

Results of the Books-Read Technique. Raubenheimer's results show that this procedure does not give quite as consistent (reliable) results as the overstatement test, but this is doubtless due to the fact that there are fewer items. It does, however, distinguish the best fourth of a privileged group from the children in the parental school.

On a priori grounds this technique is open to serious criticism. The directions say that the subject is to check every title he has read, no matter how long ago he read it. Nothing is said about degrees of recognition. All psychological experiments in recognition show how large the errors of honest recognition are. Suppose, for example, the reader were faced with a list of book titles but did not know that the list was constructed in this way. How many would he recognize? In short the strictly honest person is likely to mark many fake titles simply because he mistakes them for actual titles. On the other hand, a dishonest or careless person who is merely guessing has in each list fifteen chances of marking a real title and ten chances of marking a fake one.

C. The Paraffin-Paper Technique

This ingenious technique was used by Voelker and Cady. Voelker's first procedure made use of a four-page folder, on the third page of which was a tracing test, which required that the subject make a tracing of an irregular figure showing through a waxed paper. The folder was then turned so that page 1 was on top of page 3 directly beneath it. On page 1 was an opposites test. In writing in the words an exact copy was made on the wax paper attached to page 3. As soon as the opposites test was completed, the examiner removed the second half of the folder (pages 3 and 4) and the wax paper containing now the impression of the words as well as the tracing of the figure, ostensibly to score the tracing test, and then someone read to the pupils the correct opposites in order that they might score their own papers. Any changes of course were detected by comparison with the wax impression.

---

* See Raubenheimer's paper, p. 17.

Voelker's second method involved the concealment of a waxed surface on page 3 of a folder which had a completion test on page 1 and the answers on page 4. When the test was taken, the booklet was folded so that the wax took the impression. Then the booklet was opened with pages 1 and 4 exposed, and page 3, with the wax coating, now under page 4, which contained the answers used by the pupils in correcting their work. Cady followed this second procedure, using more sentences and grading them in difficulty so that no one could honestly complete the test.

The Results of the Paraffin-Paper Technique. Unfortunately Voelker does not report the results of his separate tests. Cady found that with fifteen sentences the test had a satisfactory reliability — that is, it measured well whatever it measured.*

But as a measure of incorrigibility the technique is not so good, although it does discriminate between two groups fairly well. Twenty-five per cent of the corrigibles cheated as against 41% of the incorrigibles in the school groups and 39% of the reform school boys. The teachers, however, could not seem to estimate the presence of this tendency at all accurately as there was almost no relation between their individual ratings and the deception scores made by those rated.

---

* He found a correlation of .578 on alternate items. If he had used thirty elements, the r would have been around .75. The r between this test and the circles and squares described later was .56. The r with the criterion of incorrigibility as determined by teacher ratings was .188 and the r with an "honesty" criterion only slightly higher even in 150 cases selected because of certainty of judgment by the raters.

In the form in which Cady used the test certain practical difficulties arose from the necessity of using hard pencils and thin paper, which caused some annoyance and possibly suspicion. The presence of the paraffin may also have been observed.

On the other hand the scores are unequivocal. There is no doubt of the fact if a pupil does make any change in his paper, though of course his understanding of the directions is not so easily assumed. If we can assume that he knows he should not change his paper, this method gives an indubitable score of deception.

D. The Peeping Technique

Like many others, this technique was first used in an extensive way by Voelker. Cady also adopted it with modifications and it has since been used by Murdoch (38) and Terman.

It consists in giving the subject a task to do with his eyes closed. The success with which the subject does the task will indicate whether he peeped or not. It is known beforehand just what results may be expected if the subject does the task honestly; if his score exceeds this normal expectation, the inference is that he peeped.

Here again the materials used vary. Voelker used two kinds, objects, and pencil and paper. The objects consisted of a form of the Pintner profile test which requires the subject to arrange certain blocks of painted wood so that they will form a profile. The chances of getting the blocks in correct order in one trial with the eyes closed are reported by Voelker to be 1 in 16; of getting them correct twice in succession, 1 in 256; three times in succession, 1 in 4096. Thus if a subject gets them right three times in suc-

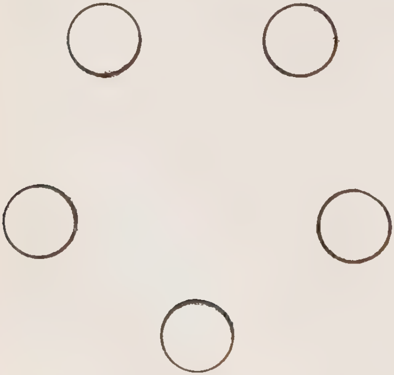


FIGURE 1

Voelker's Cardboard Test (Original 12″ × 12″)

cession, the inference of peeping is very strong. The paper and pencil test consisted of a series of identical circles arranged at the angles of an imaginary pentagon on a paper twelve inches square. A facsimile is shown in Figure 1. The subject, with eyes closed, places a pencil mark in each circle. Five trials are given and the subject records his own success or failure. Cady used circles of different sizes so as to make partial success possible. He added a series of concentric squares and a series of mazes. In the squares test the subject runs his pencil around the alley formed by having one square inside another. There are five of these alleys. His maze test is something like it except that the mazes are rather complicated. It is hard enough to do the maze with eyes open, making success almost impossible with eyes closed. These tests were presented as " scientific experiments in measuring distances with the eyes closed." Illustrations are given in Figure 2.

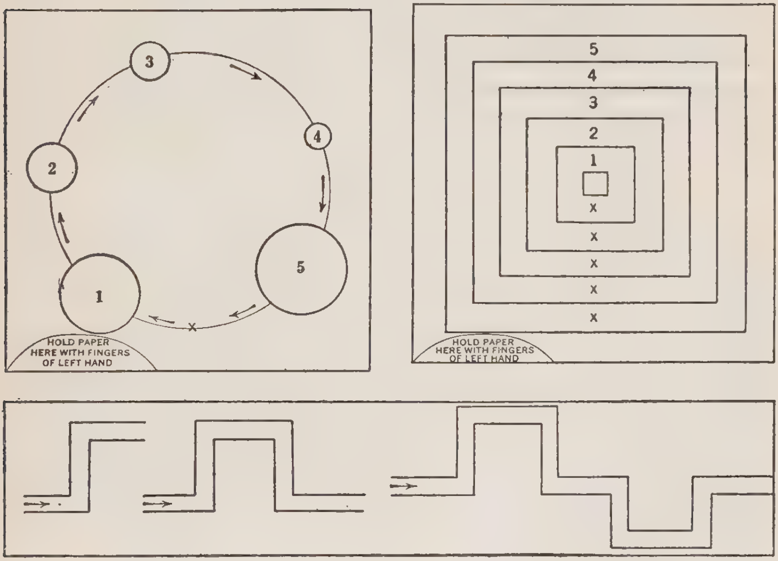

3
2
4
5
1
X
HOLD PAPER HERE WITH FINGERS OF LEFT HAND
5
4
3
2
1
X
X
X
X
X
HOLD PAPER HERE WITH FINGERS OF LEFT HAND

FIGURE 2

Cady's Trustworthiness Tests (Greatly Reduced)

In order to get at the degree of success that chance and other factors would provide, Cady submitted his circles, squares, and mazes to several presumably honest adults. He thereby established a kind of limit of possible honest achievement. Several methods of scoring have been suggested. Cady first scored his tests either zero or one depending on the evidence of peeping. Later he introduced an intermediate score and ran his scores zero for an apparently honest performance, one for a performance which showed occasional peeping, three for a performance that showed gross and continued peeping. The Terman study adopted Cady's circles and squares tests, but used graded scores according to the relative success of the performance. Thus the score for the circles was:

Number of crosses in circle 2 multiplied by 3
Number of crosses in circle 3 multiplied by 4
Number of crosses in circle 4 multiplied by 5

Circles 1 and 5 could be honestly checked and so were not included in the scoring. In the case of the squares the procedure was to ignore the smallest square and " . . . score 1 for each *corner* (except the first) where the line drawn is within the boundary lines. In addition give 1 if the entire line is within the boundaries (does not actually cross the line). This makes a possible unweighted score of 4 for each square. These scores are then weighted in the following manner:

Score on square 2 is to be multiplied by 2
Score on square 3 is to be multiplied by 3
Score on square 4 is to be multiplied by 4
Score on square 5 is to be multiplied by 6 "

As we shall see later, such scores are useful for purposes of statistical comparison even though no exact score is set in excess of which one can be certain that deception took place in the case of an individual.

Results of the Peeping Technique. Cady reports remarkably consistent results among his three pencil and paper peeping tests, which indicates that if enough are used one can predict from one occasion to another how the subject will behave.*

With a test of the length given he can give no assurance of exactly what it is that is measured by this test.†

He finds, however, that these techniques will distinguish his delinquent and non-delinquent groups very well. On the whole, Cady seems well pleased with this technique and believes it a good measure of deception.

Terman and his students in their work with gifted children found that these peeping tests did not distinguish the brilliant group from the control group as well as some of the other tests used by them. But as this technique correlates lower with intelligence than some of the others, this failure to discriminate these groups is not remarkable.

This technique seems on the whole very satisfactory. Cady points out as a possible objection that the pupils find it difficult to inhibit the "look habit." Working with eyes closed is a new experience to many of them, and once in a while some pupil will perhaps "forget" and open his eyes without intending to deceive. There is certainly a strong resistance here to be overcome in this matter of the vision habit. It is really hard not to peep. But this makes it all the more satisfactory as a test because a more or less constant resistance is supplied. The test is simple to give and easy to score. The results must be interpreted in terms of probabilities but this is characteristic of most deception tests.

---

* He reports an r of .744 between the circles and squares on a population of 150. With 44 cases his r's run

Circles and squares	.59
Circles and mazes	.51
Squares and mazes	.63

† Correlations with his rating criterion run .318 for circles, .297 for squares, and .398 for squares and circles combined for the larger population of 150. With the smaller group of 44 he gets for circles, squares, and mazes .526, .324, and .524 respectively.

Dr. Murdock used a modified form of the circles test in a study of race differences and found an r of .53 between this test and a weighted average of the six character traits estimated by means of a questionnaire.

E. Other Techniques for Testing Deception

Voelker reports other techniques used in his study, but since he has not given evaluations of individual tests all we can do is to describe them.

1. The Over-Change Test. The subject is sent on a purchasing errand. It is prearranged with the merchant to give him a certain amount of over-change. The test is what he will do with it.

2. The Let-me-help-you Test. The subject is given a difficult task such as a puzzle, which he promises to do without receiving help. A confederate of the examiner incidentally offers help. If the subject refuses it, he is scored plus; if he accepts, the score is minus. A variation of this is to give the pupil a simple arithmetic test, telling him not to look on the back page. On this page is printed a series of answers, some of which are right and some wrong. If he disobeys and copies from the back sheet, he is likely to copy some of the wrong answers and thereby get caught.

3. The Reliability Test. The subject agrees to deliver a letter to his parents and see that a reply is mailed within twenty-four hours. He further agrees not to read the letter. The letter is left unsealed. It is a letter to the parent about the bearer, asking for ratings on certain character traits. If no reply is received or if the reply appears to have been written by the bearer, he is scored as deceptive (untrustworthy).

4. The Missent Letter. The subject receives a letter from a business firm enclosing twenty-five cents. The letter says that this amount is sent to balance his account with the firm, and requests that the receipt be sent back in the addressed and stamped envelope which is enclosed.

5. Other Tests. Gundlach (15) has reported a method used to detect amounts of cheating in tests or examinations. Students taking a true-false examination were seated by pairs at tables. Half the class or half the number of pairs were given the same questions; in the case of the other half one member of a pair got a different set of questions from the other. The next week the process was reversed. A pair getting different questions the first week got identical questions the second week and *vice versa.* When collusion is possible (that is, when each member of a pair had the same questions) the number of errors is reduced ten per cent and the number of identical errors is increased eighteen to twenty per cent. This technique of course tells nothing about how many individuals copied, much less which individuals did. It is only a method of finding out how much actually went on.

Persing (40) systematically graded certain students' papers too high or too low over a period of years. Papers were returned to the students to be checked. Ninety-seven per cent reported the fact when the grades given were too low, and 9.5% when the grades given were too high. Chambers (10) observed students by means of a mirror, while he stood concealed, to see if they copied from one another or turned the page to get answers to questions. The results were checked by repeating the test without any answers available. Bird (2) used objective examinations of the multiple choice type and noted the number of identical errors in the papers of students suspected of copying from one another. By finding the probable number of identical errors due to chance alone, he was able to prove when copying took place.

CONCLUSIONS

We have now reviewed the various methods of detecting and measuring deception that had been devised by others. With ingenious efforts such as these to stimulate us and at the same time to warn us against engaging in projects doomed to failure in advance, we were able to move ahead into this little known field with some confidence of our direction if not of the outcome of our expedition.

The association and physiological techniques we can wisely let alone. Their concern is with lying only, but deceptive behavior is vastly broader and more complex than this. Furthermore, the interest of these techniques is in the detection and circumvention of deceit rather than in its measurement. Finally, the procedures used depend too much for success upon an actual rupture of relations between the examiner (as representing society) and the subject, with all the emotional accompaniments of such a break. On these accounts these techniques are ill adapted to the testing of normal populations of children for the purpose of measuring their tendency to deceive in normal situations, when there is no breach between tested and tester and no thought of accusation or defense.

We are not unmindful of the need and value of the studies of the more subtle and minute changes which it is the purpose of physiological tests to detect and record and would not be understood as standing for anything but the vigorous extension of such experiments as have been reported here into other fields and still more refined techniques.

Case studies come much nearer our present need and certain uses of this more broad and concrete approach will be reported on as we proceed. Their interest, however, has only incidentally involved deception, and no standard techniques have been developed which we could have taken over for our work even though this type of approach had seemed adapted to the needs of exact measurement.

We have steered our course therefore between the Scylla of high abstraction in laboratory methods and the Charybdis of confusing concreteness of detail in case studies, trusting rather to the indications of the advancing science of human behavior as it seeks to establish itself on foundations of adequate data concerning the overt behavior of suitably selected populations of such sizes as to afford the basis of assured statistical conclusions.

We turn then to the consideration of the conduct tests utilized by the Inquiry.

CHAPTER III

METHODS USED BY THE INQUIRY FOR MEASURING DECEPTION

In Chapter II we reviewed briefly previous efforts to detect and measure deceptive behavior. Most of these methods, however, for one reason or another proved unsuited to our purpose and we have therefore devised other techniques as needed. Since the value of our studies of deception hangs upon the nature of our tests and the meaning of the test scores, we shall present at once a description of the techniques we have used and our method of scoring. We have been faced with many difficult problems of interpretation which have involved technical matters of no interest to the average reader but which were absolutely fundamental to our whole procedure. This technical material will be found, as referred to, in Book Two.

In setting up our techniques we tried to satisfy as many as possible of the requirements which should be met by tests of this type. We have formulated these in ten criteria which it would be well for all readers to examine carefully.

1. The test situation should be as far as possible a natural situation. It should also be a controlled situation. The response should as far as possible be natural even when directed.

2. The test situation and the response should be of such a nature as to allow all subjects equal opportunity to exhibit the behavior which is being tested. That is, there should be nothing about the test itself which would prevent anyone who desired to deceive from so doing; on the other hand, there should be nothing about it to trick an honest subject into an act he would repudiate if he were aware of its import.

3. No test should subject the child to any moral strain beyond

that to which he is subjected in the natural course of his actual life situations.

4. The test should not put the subject and the examiner in false social relations to one another. The examiner should guard against being deceptive himself in order to test the subject.

5. The test should have " low visibility " ; that is, it should be of such a nature as not to arouse the suspicions of the subject. This is one of the fundamental difficulties in all such testing since the entire purpose of the test cannot be announced in advance. This criterion is all the more difficult to meet when coupled with criterion number four, for the examiner must keep secret one aspect of his purpose and at the same time be honest with the subjects.

6. The activity demanded of the subject in taking the test should have real values for him whether he is aware of these values or not.

7. The test should be of such a nature as not to be spoiled by publicity.

8. If tests are to be used in statistical studies they should be group tests. They should also be easy to administer and should be mechanically scored. They should be short enough to be given in single school periods.

9. The test results should be clear and unambiguous. It should be obvious from the results whether the subject did or did not exhibit the behavior in question. The evidence should be such as would be accepted in a court of law.

10. The scores should be quantitative, showing the amount as well as the fact of deception. Each test therefore should be flexible enough to include within its scope wide ranges of deceptive tendency.

These requirements are quite rigid and no technique has yet been devised which will meet all of them. Only one previously used method came sufficiently within the standard set to warrant our adopting it. This was the peeping type of test, which we took over with certain modifications.

We shall present our own techniques in accordance with the following outline :

- I. Methods for measuring the cheating type of deceptive behavior
  - A. As exhibited in classroom situations
    - 1. The copying technique
    - 2. The duplicating technique
    - 3. The improbable achievement technique
      - *a.* Puzzle performance tests
      - *b.* Paper and pencil tests
    - 4. The double testing technique
      - *a.* IER achievement tests
      - *b.* Speed tests
  - B. As exhibited in work done at home
  - C. As exhibited in athletic contests
  - D. As exhibited in parlor games
- II. Methods for measuring the stealing type of deception
  - A. In party or play situations
  - B. In classroom situations
- III. Methods for measuring the lying type of deception
  - A. To escape disapproval
  - B. To gain approval

Perhaps with this little map to aid him the reader will be able to find his way about more readily among the descriptions contained in this chapter.

METHODS FOR MEASURING THE CHEATING TYPE OF DECEPTIVE BEHAVIOR

A. As Exhibited in Classroom Situations

1. The Copying Technique. Copying from another pupil is supposed to be one of the most common types of cheating. One of the first methods we devised was intended to cover such cases. It consists in using two different forms of some short-answer school test which look alike but have slight, imperceptible, but important differences. The two sets are distributed alternately and " staggered " so that no two pupils side by side or back and front will have the same set. Then if a pupil attempts to copy answers from the pupil at either side of him or in front or back, he will copy the wrong answers. Unless he is a very close reader, the papers of his neighbors will appear to be exactly the same as his. This procedure may be worked with an arithmetic test, a true-false test, or any multiple answer test in which the choices are numbered and the pupils write the number of the correct answer in the margin rather than underline it.

We tried it with an " opposites " test. The task is to find the word which has an opposite meaning to the word in capitals and write its number on the dotted line at the right.

Form A

1. GIVE......1 present..2 accept..3 take..4 wish..5 absent.. (....) 1
2. FRIEND ..1 soldier..2 true..3 false..4 enemy..5 fight.. (....) 2
3. HELP .....1 hinder..2 assist..3 someone..4 need..5 chantey (....) 3
4. BORROW..1 steal..2 return..3 book..4 loan..5 debt.. (....) 4
5. KIND .....1 sweet..2 cruel..3 sort..4 sympathy..5 always.. (....) 5

Form B

1. GIVE......1 present..2 accept..3 wish..4 take..5 absent.. (....) 1
2. FRIEND ..1 soldier..2 false..3 true..4 enemy..5 fight.. (....) 2
3. HELP .....1 hinder..2 need..3 someone..4 assist..5 chantey (....) 3
4. BORROW..1 steal..2 book..3 return..4 loan..5 debt.. (....) 4
5. KIND .....1 sweet..2 sort..3 cruel..4 sympathy..5 always.. (....) 5

Here, both forms contain the same words, the only difference being a slight rearrangement so that the correct answer to item number one on form A is word number three, and on form B is word number four, but the same word as number three in A. If pupil B copies from pupil A, the answers on the dotted lines will be the same; if A's answers are correct, B's will be incorrect.

We tried these opposites tests on a small group of children in the sixth grade. On two larger groups of university students we used the same method with different material. The results in both cases were so ambiguous and hard to interpret that we abandoned the method entirely. Even with a knowledge of the seating of the pupils on the examination and even by comparing the papers pair by pair according to the seating arrangement, it is very difficult to be sure whether cheating took place. The difficulty is this. Suppose that the test has, say, ten elements or items.

Elements	1	2	3	4	5	6	7	8	9	10
Form A	3	3	5	4	1	2	2	5	4	1
Form B	2	1	4	3	2	3	1	4	2	2

Suppose also that the correct words to each multiple choice are as given above. Now a pupil taking form B may mark " 3 " instead of " 2 " as the correct response for No. 1, and make an honest mistake. But if *all* his answers to B are wrong and are at the same time the correct responses for A, then we may be sure that he cheated. But this rarely happens, for B will know some answers, will guess at or think he knows others, and may copy some from A. The net result is that one cannot tell from his paper whether he copied from A or whether he simply made mistakes, unless of course there is a great number of these mistakes that match the correct responses of the other form.*

Not only are the results ambiguous but such a technique does not give equal opportunity to all who may desire to copy. Pupils know the relative abilities of their classmates. A very dishonest pupil may show up honest on the test only because there is no one near enough from whose paper he would care to copy. Since this test failed to meet requirements numbers two and nine, we discontinued its use after the preliminary trials.

2. The Duplicating Technique. Another rather common form of classroom deceptiveness occurs when the pupil makes illegitimate use of a key or answer sheet either in doing his work or in the scoring of his own test paper. This is one type of behavior which we have been most successful in testing. We have two ways of handling this situation. The first we call the duplicating technique, which affords the same results as the paraffin test described in the previous chapter. The second we shall discuss presently when dealing with the IER tests.

Any sort of test is given, preferably the short answer type. The papers are collected and taken to the office, where a duplicate is made of each paper. Great care is taken to be certain that an exact record is made of what the pupil actually did on the test. At a later session of the class the papers are returned and each child is given a key, or answer sheet, and is asked to score his own paper. The self-scored papers are then compared with the duplicates and all changes are recorded. Deception consists in illegitimately increasing one's score by copying answers from the key.

---

* See article by Bird, Bibliography (2).

The following test materials were used for this purpose:

(a) *The Information Test.** This consists of twenty-eight items. Instead of underlining the correct answer, the pupil in this case is required to encircle it in ink. He is not allowed to hand in his paper until he has at least attempted every question. In order to cheat on this test a child has to erase the circle drawn in ink and make another, when he is asked to score his paper.†

Sample items are:

1. Bombay is a city in China France Japan India
2. Pongee is a dance food fabric drink
3. Hannibal is the name of a general king prize fighter river
4. One horse-power equals 746 watts 1000 watts $16\frac{2}{3}$ watts 2.45 watts
5. Brahmaputra is the name of a flower goddess language river

(b) *The Sentence Completion Test.** Cheating here consists in either adding on more words, that is, doing more items, or in changing words previously written in pencil by erasing and rewriting. Fifty-five sentences such as these were used:

1. Men ______________ older than boys.
2. The poor little ______________ has ______________ nothing to ______________; he is hungry.

---

* Tests *a*, *b*, *c*, and *d* were supplied by the Institute of Educational Research through the courtesy of Professor Thorndike.

† These tests were devised in order to measure the amount of resistance an individual could overcome or of trouble he would take in order to cheat. This phase of the experiment is discussed fully in Chapter XXI of Book One and Chapter XII of Book Two.

3. No ____________ what happens wrong is ____________ right.
4. He believed in ____________ hard things ____________ because ____________ ____________ hard.
5. He must ____________ further assistance from us. We cannot give it.

(*c*) *The Word Knowledge Test.** This is arranged as a multiple choice test. The response words are numbered from one to five. When the correct response word is located, its number is written on the dotted line at the margin. Cheating consists in either erasing this number and entering the correct one or in writing down more numbers. There were 120 items in all, such as these:

1. boyish 1 naughty . . 2 male . . 3 impudent . . 4 like a boy . . 5 informal . . . . . .1.
2. blunt 1 dull . . 2 drowsy . . 3 deaf . . 4 doubtful . . 5 ugly . . . . . .2.
3. default 1 defeat . . 2 blame . . 3 failure . . 4 libel . . 5 displace . . . . . .3.
4. allusion 1 aria . . 2 illusion . . 3 eulogy . . 4 dream . . 5 reference . . . . . .4.
5. astute 1 rigorous . . 2 shrewd . . 3 unsound . . 4 bony . . 5 astonished . . . . . .5.

(*d*) *The Arithmetic Test.** Here also the answers are written at the margin and changes are made as in the case of the previous test. The original test had fifty examples of which the following are illustrations:

1. When sugar costs 10 cents a pound, how much will 5 pounds cost? . . . . Answer (. . .)
2. How many eggs are needed to make 3 cakes if you use 2 eggs for one cake? . . . . Answer (. . .)
3. $\frac{1}{8} \times 22$ equals . . . . Answer (. . .)
4. 18 equals ——% of 40? . . . . Answer (. . .)

---

* Tests *a*, *b*, *c*, and *d* were supplied by the Institute of Educational Research through the courtesy of Professor Thorndike.

5. A push-cart man buys eggs at 15¢ per dozen and sells them at 15 for 25¢. How many eggs must he sell to gain \$1.80? . . . . Answer (. . .)

(*e*) *The Thorndike-McCall Reading Scale.* This test consists of short paragraphs to be read by the subject. Then follow a few questions the correct answers to which can be given in a single word or short phrase. Cheating consists in changing one or two words or sometimes a whole phrase, or in filling in more answers.

(*f*) *An Original Disarranged Sentence Test.* In this test the task is to straighten out mixed-up words so they will make a sentence. If the child finds any problem too difficult he is required to draw a line through the blank space, to indicate that he has omitted it. Cheating can be accomplished therefore only by erasing a line or sentence and substituting something else. There were fifteen word groups such as these:

1. houses people live in ________________________________

2. teacher to I paper my correct asked my ________________________________

3. pies Will feel sick and eskimo could not eat five ________________________________

4. aggravate miseries pleasure present recall past to is but to our ________________________________

5. to to to is is be be good good noble, how teach but others nobler — and less trouble ________________________________

(*g*) *An Original Spelling Test.* The test is made up of ninety words some of which are misspelled. The task is to check misspelled words. To cheat, one had only to add more check marks or erase those previously made.

1. —— ache
2. —— beleive
3. —— laid
4. —— hybred
5. —— rythm
6. —— genuine
7. —— niece
8. —— sacreligious
9 —— chauffeur
10. —— parlimentary

It was necessary to have each test steeply graded in difficulty and to give less time than even the most competent would require to complete the test, so that when the papers were scored there would be abundant opportunity to make use of the keys if any were disposed to do so. Thus for the Thorndike-McCall Reading Test we allowed only fifteen minutes although the standard time is thirty.

The directions for handling the duplicating technique will be found in Appendix B.

Scoring. In all these tests, two kinds of scores are used, the *amount score* and the *fact score.* The *amount score* is the total score when the test is given under conditions permitting dishonesty. It ordinarily contains an element of honest performance for which allowance is properly made as will be explained later. In the case of the duplicating technique, each change counted as one point. If the pupil made only one change in his paper and this did not affect his score it was counted as zero. Two or more changes were counted whether they affected the score or not.* The amount score is simply the number of changes made. The total amount score for all the tests was obtained by summing up all the changes after they had been reduced to a common denominator.† The *fact score* ‡ is a record of the fact of honesty or deception. It is simply a " c " (cheating) whenever two or more changes are made or when one change affects the score.

This technique meets most of the requirements very well. It would seem at first sight to have rather " high visibility " and not be applicable to older groups. We have evidence, however, that it has been successfully used with a group of college sophomores. We have not employed it extensively, however, because it is too expensive and time-consuming.

3. The Improbable Achievement Technique. This consists in giving a test under conditions such that achievement above a certain level will indicate deception. An example is the circles test described in Chapter II. It will be recalled that the pupil is given a sheet of paper with a number of small circles placed on it. The pupil is instructed to close his eyes and make a pencil mark of some sort in each circle. Even chance alone will provide a certain amount of success. But achievement beyond a certain point is evidence of deception by peeping.

---

* Pupils sometimes make changes in spelling or wording which do not affect the answer.

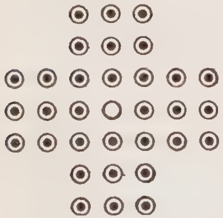
† Each score was divided by the standard deviation of its distribution.

‡ In most cases this " fact " represents a *probability* of 999 chances in 1000.

We have used this technique with two kinds of tests, one requiring the use of paper and pencil and the other the use of objects like puzzles or games. As the puzzle tests are the simpler we will describe these first.

(*a*) *Puzzle Performance Tests.* There are certain kinds of mechanical puzzles which may be effectively used. The puzzle must appear simple but be in reality very difficult. It must require genuine skill rather than the knowledge of a secret trick or principle. It must be of such a nature that the dishonest pupil can fake a solution or appear to have solved it when he really did not. After considerable preliminary searching and experimenting we settled on three puzzles.

(1) *The Puzzle Peg* (*or Peg Solitaire*). This is a game of solitaire which may be bought in the toy stores. It consists of a circular board about six inches in diameter with thirty-three holes arranged as in the diagram. Each hole has a peg in it except the center one. When two pegs are adjacent with a vacant hole next in line, one peg may jump the other and land in the vacant hole. The peg "jumped" is removed. The problem is to jump all the pegs off the board except one and leave this one in the center hole. Anyone who has tried this knows how very difficult it is. The time allowed was five minutes for the first trial and three for the second. Cheating consists in faking a solution by pulling out all the pegs but one and placing it in the middle hole without playing the game at all. Or the solution may be partly faked by pulling out some pegs and jumping some.



In administering the puzzle tests a score sheet was used of which a portion is shown below. It should be noted that in all the puzzle tests we have only the record made by the child on his score sheet. We do not know of course whether the deceptive child falsified his performance but made a true record of it, or whether he did not falsify his performance but made a false record of it. In one puzzle for one group this matter was checked and we found that in over ninety per cent of the deceptive cases the peg boards and score sheets agreed.

PUZZLE TESTS SCORE SHEET

Name.. Grade..

School.. Date..

The following spaces are for recording your scores. Do not make any entries until told what to do.

Pill Boxes: Weight discrimination.

In the spaces below copy the numbers from the bottoms of the boxes to show the order in which you had them at the end of each trial.

1st trial ☐ ☐ ☐ ☐ ☐ ☐ ☐

2nd trial ☐ ☐ ☐ ☐ ☐ ☐ ☐

Puzzle Blocks "Sixteen"

Copy the numbers off the blocks into the squares at the right to show the order they were in at the end of the test.

Peg Board

a. Write in the space at the right the number of pegs left on the board at the end of the first trial.. (..........)

b. Write in the space at the right the number of pegs left on the board at the end of the second trial.. (..........)

c. Write "yes" in the space at the right if you had only one peg left on either trial and it in the middle.. (..........)

We have found no one yet who, without considerable previous experience with this game, could solve it in five minutes. Consequently any child who claims to have solved it in the time allowed is cheating or else he is one of those very rare persons who by many hours of previous practice has learned the game so well as to do it in five minutes. It is only slightly less difficult to leave one or two pegs standing anywhere on the board.

The amount score was the number of pegs left on the board at the end of the second period, or the smallest number achieved during the period.

For the fact score, the pupil was scored as having cheated if only one or two pegs were left in any holes on either trial.

(2) *The Fifteen Puzzle.* This puzzle had a certain advantage over the peg board in that it could not be bought in the toy shops in New York during our testing although a modified form was issued as advertising material by a commercial company. We did find three sets in a small store that deals exclusively in magicians' trick materials. Every dealer professed to have known it years ago but informed us that it was now out of style and off the market.* It consists simply of a small box four inches square with sixteen blocks each one inch square and numbered zero to fifteen. The small squares are made of wood. We arranged them in a standardized chance order which was as follows: †

10	8	5	13
15	6	2	3
9	11	12	0
14	1	7	4

The problem is to remove the one marked 0 and then by sliding the others around get them in this order:

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	

It is strictly forbidden to remove any block from the board. The puzzle must be solved by sliding the blocks around. Five to eight minutes were allowed. Here cheating consists in taking the blocks out and placing them in the correct order without playing the game.

---

* It has since reappeared in the toy stores.

† For future work we have adopted a different arrangement, only partially solvable.

As these puzzles were not available, we had to manufacture them ourselves.

In the spaces provided on the score sheet the child makes a record of the numbers on the squares as they appeared when time was called.

To obtain the amount score, the rows across the square were taken as units and weighted thus:

1st row correct, 1 2 3 4	1 credit
2d row correct, 5 6 7 8	2 credits
3d row correct, 9 10 11 12	3 credits
4th row correct, 13 14 15	4 credits
Maximum score	10 credits

Before a pupil was marked " c " or negative, he must have scored the maximum.

(3) *The Weight Discrimination Test.* This was really not a puzzle, but a modification of the weight discrimination test used in the Binet intelligence test and in routine experiments in psychological laboratories. It consisted of seven small pill boxes. The boxes were filled in our office with cotton batting and buck shot so that in each set of seven no two weighed the same. They were numbered on the bottom from one to seven, in order of weight. The difference in weight between any adjoining boxes of the set, as one and two or three and four, was too slight to be detected,* so that no one could arrange the boxes in order of weight without looking at the numbers, except by chance.

The instructions were to turn the numbers down and arrange the boxes in the order of their weight. After the first trial the pupils were told to look at the numbers on the bottom and copy these numbers off on the score sheet to show how they had been arranged. They were then told that the correct arrangement was the serial order 1, 2, 3, 4, 5, 6, 7 and were asked to turn the numbers down again and not look at them during the second trial. Three minutes were given for each trial. Cheating consists in peeping at the numbers.

---

* The weights averaged in grams (1) 3.6, (2) 3.7, (3) 3.8, (4) 3.9, (5) 4.0, (6) 4.1, (7) 4.2, with variations always checked so as to secure real differences in any one set.

The weights were arranged twice and a record made each time on the score sheet. These records were scored as follows: First, a position score was given each trial by giving one point credit for each weight in its correct position. Thus all weights in correct order scored seven. Any weight in its correct position regardless of the others was scored one credit. For example, an arrangement like this: 2 1 3 5 7 6 4 was scored one, because weight number three was in position number three. This scheme gave two position scores, one for each trial. But since on the second trial the pupils were told that the numbers indicated the correct order, more significance was attached to the second trial.

The two position scores were combined and "weighted" according to the likelihood of dishonesty.* That is, the combinations that were least likely to occur by chance were given correspondingly larger cheating scores and *vice versa.*

Any combination was rated "c" which contained a position

---

* To get the amount score, the following table of arbitrary weights was constructed. The first column represents the first trial and the second column the second trial. "W" means the weighted total score assigned to the raw score values shown in the first two columns.

1st	2d	W	1st	2d	W	1st	2d	W	1st	2d	W	1st	2d	W
7	7	11	4	5	6	4	7	4	4	3	3	3	2	1
5	7	10	3	5	6	3	7	4	4	2	3	2	2	1
4	7	10	7	4	6	2	7	4	4	1	3	1	2	1
3	7	9	5	4	6	1	7	4	4	0	3	0	2	1
2	7	9	2	5	5	0	7	4	3	3	2	3	1–0	0
7	5	8	1	5	5	5	3	4	2	3	2	2	1–0	0
5	5	8	0	5	5	2	4	1	1	3	2	1	1–0	0
1	7	7	7	0	5	5	1	4	0	3	2	0	1–0	0
0	7	7	7	1	5	5	0	4						
			7	2	5									

Any amount score of 7, 8, 9, 10, or 11 was scored "c." See Book Two for further explanations.

score of 7 on the second trial, or of 5 on the second trial provided the 5 was preceded by a 5 or 7 on the first trial.

(*b*) *Paper and Pencil Tests.* Three tests were used, namely, a Squares test, as devised by Cady, a Circles test, similar to Voelker's

SQUARES PUZZLE

Put your pencil point on the cross in Square No. 1. When the signal is given, shut your eyes and move the pencil in the direction of the arrow around the center and back to the cross, without touching the sides of the lane. Wait for the signal for each trial.

After each trial if you succeeded in doing that square correctly, put a check mark on the line after the number of the square you have just tried. If you touched the side once you lose the square, and get no score for it. After the last trial enter the total score using the table at the right for finding the score. The maximum score is 100.

Record of Trials

Square 1..................

Square 2..................

Square 3..................

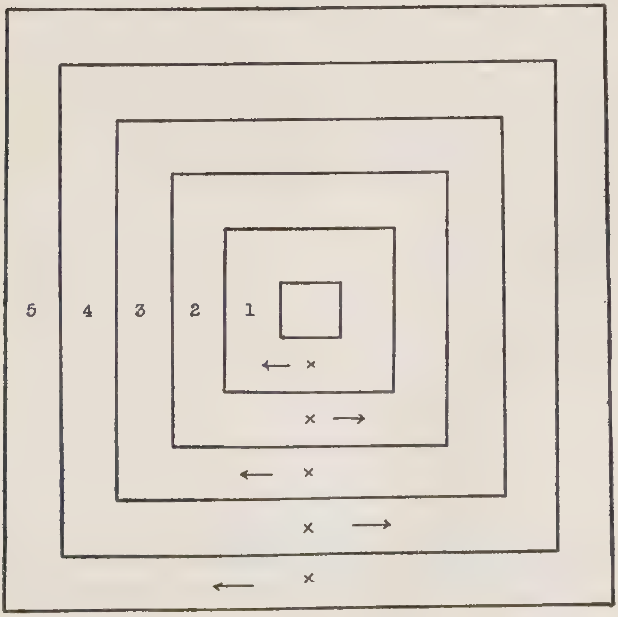
Square 4..................

Square 5..................

Total Score..............

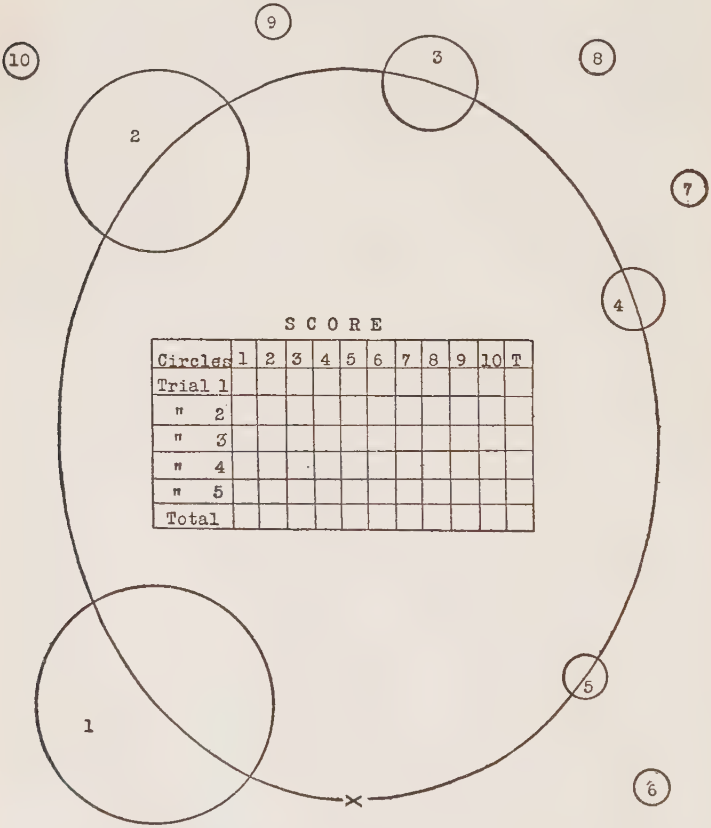
Score Values Table

Any one right is........	5
Any two right is........	15
Any three right is........	30
Any four right is........	60
Any five right is........	100



CIRCLES PUZZLE

Wait for the signal for each trial. Put the point of your pencil on the cross at the foot of the oval. Then when the signal is given shut your eyes and put the figure 1 in each circle, taking them in order. For the second trial, put the figure 2 in each circle. For the third trial, the figure 3, etc. After each trial put a check mark in the score box under the number of each circle you succeeded in striking, count the checks and enter the total in the column headed T at the right of the score box. After the last trial add up Column T. This is your score. The maximum score is 50.



SCORE

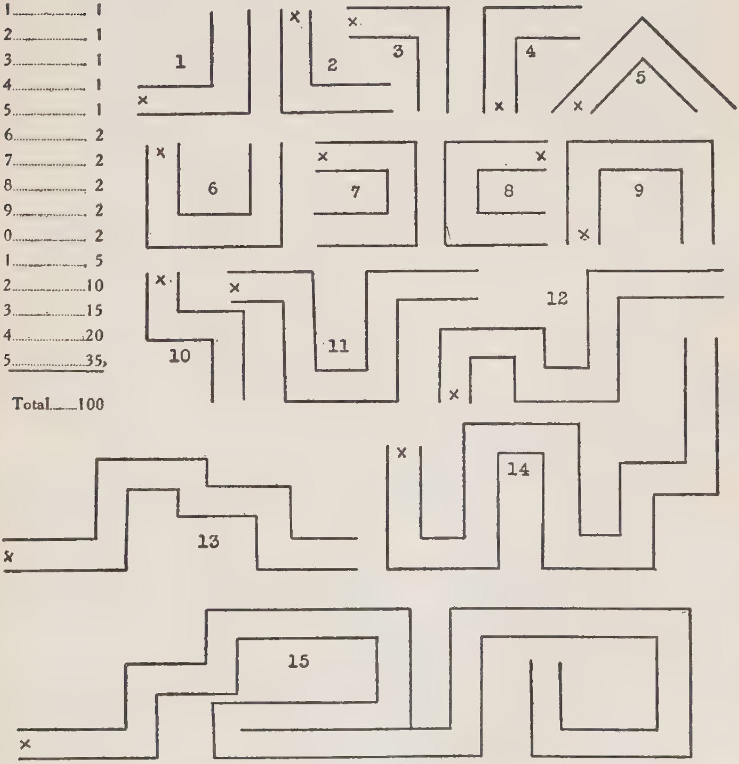
Circles	1	2	3	4	5	6	7	8	9	10	T
Trial 1											
" 2											
" 3											
" 4											
" 5											
Total											

and Cady's, and a Mazes test suggested by Cady's. These we have called "coördination" tests inasmuch as the function involved seems to be that of muscular coördination. The facsimiles will make these clear. Full directions for giving them will be found in section C of the Appendix. The pupils were told frequently to keep their eyes shut while making their marks on the papers. Cheating consists in opening the eyes to improve one's score.

MAZES PUZZLE

Wait for signal for each maze. Each time put the point of your pencil on the cross. Then when the signal is given shut your eyes and move the pencil through the maze without touching the sides. After each effort enter the score value on the dotted line at the left after the maze number. The score value of the maze is given in the right hand column. When through, add your scores. The maximum score is 100.

Maze No.		Score Value
1	....	1
2	....	1
3	....	1
4	....	1
5	....	1
6	....	2
7	....	2
8	....	2
9	....	2
10	....	2
11	....	5
12	....	10
13	....	15
14	....	20
15	....	35
Total	....	100



Both Voelker and Cady made some effort to find out the limit of honest ability on tests of this sort, but only by using themselves or adults as subjects. The children were then scored " yes " or " no " according to whether they exceeded these limits when their eyes were supposed to be shut. As we wanted a score that would show the amount as well as the fact of cheating, we used a control population of 275 children in grades five to eight of a public school under conditions which precluded the use of the eyes. We tested only half the pupils in a classroom at one time. One row would sit at the desks ready to take the test and the other would stand beside the first row, each pupil with a cardboard in his hand. When all the directions had been given and the seated pupils were ready to shut their eyes, the standing pupils placed the cardboards in front of the eyes of those who were seated at their desks so that the entire test paper was concealed from the subject taking the test. No change in posture was needed. From these " honest " results we found the limits of probable achievement and the relative amount of achievement to be expected on the three tasks.

When the tests were first given we had the pupils score their own papers. We felt that this put too much strain on the honest pupils and so later abandoned all scoring by pupils. Only three trials were used for the Circles test, instead of five. The final scoring methods may be summarized as follows:

1. Squares. Amount score equals number of corners turned correctly. Fact score allows 13 corners; 14 or more is called a " c."

2. Circles. Amount score equals total number of figures in all ten circles in the three trials. Fact score allows 13 marks in the circles and calls 14 or more a " c."

3. Mazes. Amount score equals total number of corners turned correctly. Fact score allows 31 corners and calls 32 or more a " c."

4. Total score on Coördination tests. In adding these scores together allowance is made for the extra length of the Mazes test, which is twice as long as the others. The total amount score thus

equals the sum of the Squares and Circles plus half the Mazes score.*

Value of the Improbable Achievement Technique. On the whole the improbable achievement technique is satisfactory. Its chief weakness lies in the difficulty of discovering just what level of achievement is probable or improbable for individuals or groups. The Puzzle tests are rather cumbersome to handle as group tests, due to the fact that thirty or forty boxes of the size used are somewhat unwieldy. And of course in testing several groups it is a saving of time to have enough for two or three groups to use simultaneously. But this is a minor difficulty.

4. The Double Testing Technique.† When this method is used the pupils are tested twice. On one occasion there is strict supervision and no opportunity to deceive is given. On the other occasion the conditions are such as to permit deception: the barriers are let down, and the only resistance to the tendency to cheat is

---

* The scores are weighted by their respective SD's. The means and SD's of honest performance are as follows:

	MEAN	SD	ALLOWANCE
Squares	5.26	2.71	13
Circles	5.71	2.55	13
Mazes	14.17	5.66	31

The allowance is the honest mean plus three times the honest SD.

The method of getting what we call the Xi score, which is in terms of the ratio of deviation from the honest mean to the honest SD, is discussed in connection with the IER material and defended at length in Book Two.

† The overstatement test described in Chapter II is an illustration of this technique. Voelker suggested a test of this nature also, although he did not use it. He proposed that the subjects be asked to memorize a poem and then try to write it without referring to the copy which they retained. When the pupils are writing off the poem the examiner is supposed to leave the room. At the next meeting the poem is returned to them and they are asked to read it through. It is then collected and they are again instructed to write it from memory and the examiner remains in the room. Score is obtained by dividing the percentage of words correctly written in the second test by the percentage correctly written in the first test.

in the individual's own habits and attitudes. The difference between the scores made on the two occasions is roughly a measure of the tendency to deceive. Cheating consists in either copying answers from the key or in changing answers to match the key.

Any sort of test material may be used for this method. It may be intelligence tests or educational achievement tests (such as arithmetic, spelling, or reading) or it may be any sort of traditional psychological test. The chief requirements of the material are that it be available in two equivalent forms and that these forms all have the same degree of difficulty at all levels.* To illustrate, suppose we have two sets of arithmetic problems. Each set is arranged in order of difficulty from the easiest to the hardest. Further, suppose that every problem in form A is matched with a similar and equally difficult (but not exactly identical) problem in form B. Now the assumption is that if a pupil scores twenty in form A he will also score twenty or thereabouts in form B. Suppose that form A is given on Monday and each pupil is given an answer sheet and told to correct his own paper but to keep the answer sheet out of sight until he is ready to score; then on Tuesday form B is given but now no answer sheets are passed out. If a pupil scores thirty on Monday with the key and twenty on Tuesday without the key, then the presumption is that he made illegitimate use of the key on Monday.†

We have used the double testing technique with two kinds of material. The first kind was intelligence testing material developed by the Institute of Educational Research in connection with a series of studies made on levels of intelligence. This material was placed at our disposal through the courtesy of Professor Thorndike. We shall refer to it as the IER tests. The second kind of material was developed by us out of the stock varieties of psychological speed tests. We shall describe these tests presently and refer to them as Speed tests.

---

* The two forms must also have reasonable reliability, as will be discussed later.

† The technical problems involved in the scoring, standardization, and interpretation of this material are all discussed at length in Book Two, the statistical supplement.

(*a*) *The IER Achievement Tests.* From Professor Thorndike's intelligence level materials we selected five kinds:

1. Arithmetic problems
2. Mutilated sentences for sentence completion tests
3. Information test elements
4. Word knowledge or vocabulary test elements
5. Selections for reading tests *

Samples of the first four were given in connection with the discussion of the duplicating technique on pages 51 ff. These were particularly adapted to our needs. In the first place, the material had already been carefully validated as intelligence testing material so that the total score obtained under supervised conditions gave an excellent measure of the pupils' intelligence. In the second place, the difficulty of each test element had been experimentally determined. Two parallel sets or forms of each test were built by taking two or three elements from each level of difficulty. Tests thus constructed were easy enough for fifth-grade children at the lower end and hard enough for eighth-grade pupils at the upper end. In fact, all pupils tested were able to do something with each test, and no pupil was able to make a perfect score when the tests were given under supervision. This gave even the brightest pupils room to use the key if they wanted to. Thus by using such tests we measured both intelligence and deception.

We have just observed that the two forms were built so as to be approximately parallel and equal in difficulty. This meant that if a pupil reached a given level under supervision he would be expected to go no higher under conditions permitting the use of an answer sheet. But even when no deception is present there will be variations in scores from day to day on tests that are as nearly alike as it is now possible to make them. In other words, the best arithmetic test made will not measure arithmetical ability as accurately as a yardstick will measure the length of a table. It was necessary, therefore, to make allowance for normal fluctuations in scores and not credit to deception any differences that might be due to imperfections in the tests or to variations in the interest and ability of the pupils.

---

* Omitted after preliminary experimentation as it was found unsuited for this use.

We can best illustrate how we made this allowance by taking some actual cases. Table I gives a list of scores on the Arithmetic test on two occasions when no chance to deceive was permitted, and on two other occasions when on the first day an answer sheet was at hand and on the second day no answer sheet was given.

TABLE I

Comparison of Changes from Day to Day in Test Scores of Sixteen Pupils (I) When No Chance to Cheat Was Given and (II) When There Was a Chance to Cheat on One Occasion but Not on the Other

(I)				(II)			
Pupil	No Cheating			Pupil	Chance to Cheat on First Day		
	1st Day Score	2d Day Score	Difference		Key 1st Day Score	No Key 2d Day Score	Difference
A	32	32	0	M	36	22	− 14
B	31	30	− 1	N	39	7	− 32
C	29	24	− 5	O	47	10	− 37
D	27	28	+ 1	P	39	13	− 26
E	24	26	+ 2	Q	51	21	− 30
F	29	34	+ 5	R	40	15	− 25
G	29	29	0	S	32	26	− 6
H	38	39	+ 1	T	20	17	− 3
Average			+ .37	Average			− 21.6

To make the evidence of the use of answer sheets rather obvious we have taken for illustration under (II) of Table I a group from an extremely deceptive population. Here, it will be noticed, the differences between the scores of the two days are enormous. The average difference of the honest scores is a gain of .37 examples and the average difference of the dishonest scores is a loss of 21.6 examples. That is, the presence of the key made possible an average score 21.6 points bigger than was possible when the answer sheet was not present. In the case of one of the pairs of honest scores (I), however, there was a loss of five points even though no answer sheet was involved at all. On this basis we could say that the two last cases under (II) probably did not cheat and that the rest probably did.

Of course to be sure of our judgment we had to use a large number of cases in order to find the most extreme differences that are

TABLE II

TYPICAL GAINS AND LOSSES IN ARITHMETIC BETWEEN THE FIRST AND SECOND DAY WHEN NO CHEATING WENT ON

GAIN OR LOSS	FREQUENCY
+ 11	2
+ 10	1
+ 9	3
+ 8	2
+ 7	2
+ 6	14
+ 5	20
+ 4	19
+ 3	57
+ 2	31
+ 1	57
0	45
− 1	30
− 2	20
− 3	28
− 4	6
− 5	9
− 6	2
− 7	2
− 8	2
N or total	352

Average or mean = + 1.06
Standard deviation = 3.10

This table reads: 2 pupils gained 11 points, 1 pupil gained 10 points, 3 pupils gained 9 points; also 2 pupils *lost* 8 points, 2 lost 7 points, etc.

likely to occur when no answer sheets are available. The details of this process of standardization will be found in Book Two. It is sufficient for the guidance of the general reader to know that we must allow a difference of eight arithmetic problems before assuming that cheating took place.

Some confidence in the trustworthiness of this procedure may be gained by picturing what we actually find in large populations. Table II shows the gains and losses actually noted in 352 children of grades five, six, seven, and eight. The figures represent the same thing as those in the "Difference" column under (I) of Table I. They are differences between the first and second day when no answer sheets are available and no cheating is permitted. The amount of gain or loss is shown in the column at the left and the number of pupils having this amount of gain or loss is given in the second column. This way of presenting a set of scores is called a "distribution" or "frequency distribution."

When these figures are graphically portrayed they make Figure 3. Along the base line the amount of gain or loss is laid out in equal steps. The number of cases showing each amount is indicated by the height of the column rising above each step on the base line. It will be seen that about as many gain as lose. The average, in fact, is a gain of 1.06 examples.

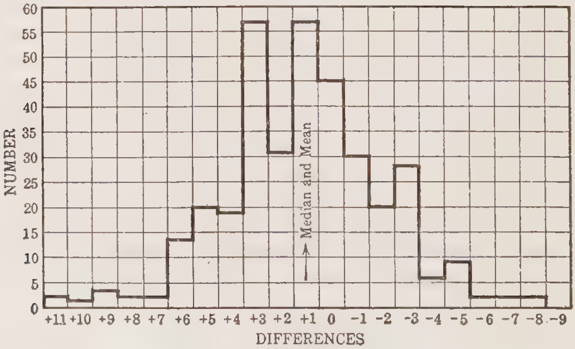


FIGURE 3

Histogram Showing Graphically the Distribution of Honest Differences in Arithmetic Scores on Two Occasions

Now look at Figure 4. This shows the gain and loss when on the first day the children have an answer sheet with which to score their papers but are instructed to keep it out of sight until time to use it for scoring. Note the position of the two means in relation to zero gain or loss.

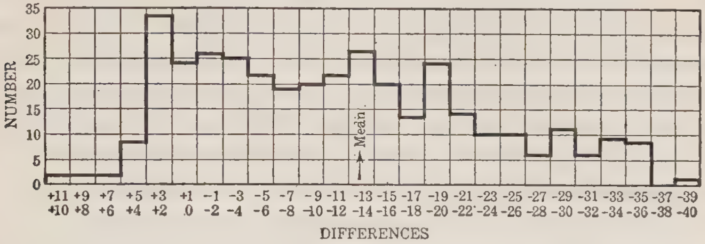


FIGURE 4

Histogram Showing Graphically the Distribution of Differences between Honest and Dishonest Arithmetic Scores

Smoothing these curves as they would appear if we had still more cases and putting them on the same graph, we have Figure 5, in which the solid line is the honest difference and the dotted line the dishonest difference.

In nearly all our scores we use as a unit of measure the amount an individual, under conditions permitting dishonesty, deviates from what might be expected of him when dishonesty is impossible. This involves a common statistical concept which we should like to make clear to the non-technical reader in a brief digression.

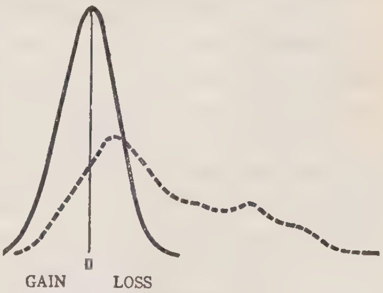


FIGURE 5

Comparing Test Results When No Answer Sheet Is Used on Either Day with Results When Answer Sheets Are Available on the First Day

(1) *Explanation of Statistical Terms.* In the first place, all measurements require at least two things: first, a unit for measuring,

such as the inch, the yard, the dollar; second, a point of reference from which measurements are taken, such as sea level for altitudes, the freezing point of water for centigrade temperatures. In statistics it is customary to use as the point of reference some central tendency of the set of facts in question, such as the mean (average) or median. The unit is some measure of the variability or the fluctuation of these measures around this point of reference. In this particular problem and in fact always throughout this investigation the point of reference from which measures are taken is the mean or average. Thus in Table II let us now think of these differences as deviations from the average, which is 1.06. A *loss* of 8 points on the Arithmetic test now becomes a deviation of 8 plus 1.06 or -9.06 from the average; a *gain* of 3 points is a deviation of 3 *minus* 1.06 or $+1.94$, and so on for all the rest. Thus even a zero difference becomes, in accordance with this plan, a deviation of -1.06.

It will make it easier to understand these terms if the reader will refer to Figure 3, which visualizes the figures of Table II. Along the line at the bottom are counted the gains or losses in units of one. The number of individuals making each gain or loss is shown by the height of the column over each step on the base line. These numbers are called "frequencies," and the space inclosed by the curve and base line is called a "surface of frequency." The vertical line at the center shows the position of the mean, or arithmetical average, which is simply the sum of all the measures divided by their number. It happens also in this one case to be the median. The median is found by counting in from either end to the point on each side of which one-half the cases fall when the series of measures is arranged in a distribution as in Table II. Thus for the figures of this table, the sum of the frequencies is 352, *i.e.*, there are 352 individuals. One-half of this figure is 176. So counting in 176 from either end we come to plus one as the mid-point. This is the median of the distribution.*

We shall state most of our scores, then, as deviations from the mean or median of the corresponding distribution of an "honest" population such as is shown in Table II, *i.e.*, which had no chance to cheat. A loss of four on the Arithmetic test is scored 4 + 1.06 or 5.06 instead of 4.

---

* Strictly, of course, the median is $\frac{32}{57}$ beyond .5 or 1.06, since the figures are differences, not original scores.

This takes care of the point of reference, but we still lack a common unit of measurement. In this work we have used for the most part the "mean square deviation," or what is often called the "standard deviation" (SD), commonly referred to as "sigma" (σ). This also requires a word of explanation. Suppose we take all the deviations from the average of the arithmetic differences in Table II and square them. One reason for squaring them is to get rid of the signs, as some deviate upwards (+) and some downwards (−) from the average, but the squares are all +. The average, of course, deviates zero from itself. After these deviations are all squared, the average of these squares is found. This figure tells what the average squared distance is from the mean. Then to get this figure back in terms of the deviations with which we started we extract its square root. This is the *standard deviation.* We do this for every distribution of measures such as given in Table II and use it for the unit. Now we can express such deviations as are shown in Figure 4 in terms of this unit. To do this we simply divide each by it. In the case of the Arithmetic test the SD is found to be 3.1. Thus a loss of eight points is a deviation of 8+1.06, or 9.06, which, when divided by 3.1, becomes 2.92 SD's.

We now have a common point of reference for all our tests and can measure all differences in a common unit, the SD or σ of "honest" differences. From now on instead of talking about a loss of eight points or twenty points, we shall talk about a deviation of −2.92 SD, etc., and shall call this for short the Xi score or amount score.

The practical advantages of this scheme are at once apparent. For instance in the Word Knowledge test the mean difference when no keys are available is +3.31 and the SD is 8.48. Consequently in this test a loss of eight points is a deviate of 8 + 3.31 or 11.31, but when this is divided by 8.48 it becomes only 1.33 SD's from the point of reference. Thus a loss of eight points on the

Arithmetic is as much more significant of deception than a loss of eight points on the Word Knowledge test as 2.92 is greater than 1.33.

Another very marked advantage of using the SD is that we can state all scores in terms of probabilities. If a distribution of measures is fairly symmetrical, that is, high in the middle and tapering off at each end, as is the case with the distributions in Table II, we can state the chances of occurrence of any given deviations. To make this clear let us picture the facts. The diagram of Figure 6 is a " normal " curve, which in addition to being perfectly symmetrical has certain mathematical properties that belong to curves representing chance distributions of facts. Such a curve would result from tossing, say, ten coins a large number of times and recording each time the number of heads that come up. This curve affords a picture of the statistical concepts used here. The mean and median are the same here, being at the mid-point of the base line. The SD is a *distance* along the base line from the mean to a point on either side of it which includes 34.13% of the cases, or 34.13% of the area inclosed by the curve, base line, and two perpendiculars. Distances along the base line to the left are usually marked minus and those to the right plus. The curve, theoretically, never really touches the base line but approaches it. For practical purposes it is regarded as touching it at a distance of three times the SD from the mean. Between the mean and -3 SD there are 49.865% of the cases. Thus between the limits of $+3$ SD and -3 SD there are 99.73% of the cases. Between the limits of -4 SD and $+4$ SD there are 99.994% of the cases.

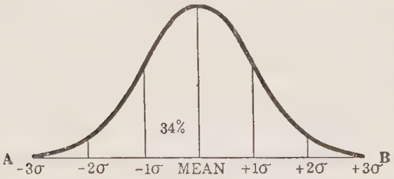


FIGURE 6

Properties of the Normal Curve

Tables have been prepared which give for each value of SD (or σ) the proportion of the entire surface falling on each side of the line projected from the SD to the curve, and which will therefore show the probability that any given measure will occur. These are known as tables of the values of the normal probability integral. Suppose we have a case that deviates -1σ from the mean. The table shows that there are 34.134% of the cases between the mean and -1σ. By subtracting this from 50% we find what per cent lie between -1σ and the left-hand limits of the curve, since this entire area includes 50% of the cases. In this instance the figure is 15.866%. By adding 50% we get the per cent lying between -1σ and the right-hand limit of the curve. These figures can be expressed directly as probabilities. The chances of a deviate of greater than -1σ occurring are 15.866 in 100, or 158.66 in 1000, or 1586.6 in 10,000, etc. Conversely the chances of a deviate of less than -1.0 SD or some positive SD occurring are 84.134 in 100, or 841.34 in 1000, etc. Thus any SD score can be translated into terms of the probability that cheating did or did not take place.

(2) *Application of Terms to the IER Material.* With this explanation of terms in mind, we can now see why we drew the line of honest difference at eight points on the Arithmetic test. We found that this score was 2.92 times the Arithmetic σ. The table shows that two cases in a thousand will fall beyond this point, or have a loss of more than eight points from one test to the next. But the next possible difference is nine points, and this is a deviation of 10.06, which is 3.24 times the standard deviation of the honest arithmetic difference, and the table of probabilities shows that this would occur only six times in 10,000. In other words, if we give a cheating score " c " to an individual who does nine fewer problems on the second test, when there is no answer sheet, than he does on the first day, when there is an answer sheet, we shall be wrong in six cases out of every 10,000. This perhaps would compare favorably with the best courts of justice throughout the world.*

---

* As a matter of fact, we do not actually do injustice to anyone by this procedure, for we make no use of the results in a personal way, and deal for the most part with groups rather than with individuals. All our relations are worked out on paper for the purpose of discovering facts about human nature. They are not used as a means of "catching" the individual and then confronting him with the "crime." Praise and blame we leave to other occasions.

Similarly we have determined the limits of honest difference on each* of the three other IER tests and in each case have called cheating a difference which is three or more times the standard deviation of that found under "honesty" conditions. The limits for the tests are as follows:

1.	Arithmetic	8
2.	Completions	10
3.	Information	9
4.	Word Knowledge	22

The fact score is thus found by giving a "c" to any difference bigger than those just listed. The amount score is simply the Xi deviation, or the actual deviation from the honest mean divided by the standard deviation of the honest differences.

(*b*) *The Speed Tests.* While the IER material has the great advantage of being at once an intelligence test, a set of achievement tests in certain subjects, and a set of honesty tests, it has at the same time certain disadvantages. First, the IER tests used by us usually require a total of about four school hours to give both forms, two hours the first day and two hours the second. Second, they are expensive both to print and to score. Third, they are not adapted, in their present form at least, to pupils below the fifth grade. For these reasons it seemed likely that this material could not be used widely for honesty tests.

In the hope of developing something that could be used by school principals and others to measure the tendency to deceive, at least until spoiled by publicity, we turned to some of the older psychological speed tests for material. Short tests with high reliability, easily scored and applicable to all ages and grade levels, were needed. After some preliminary experimenting we selected six tests:

1. A simple test of addition requiring the rapid addition of one or two digit combinations, such as 4 and 5, 6 and 2
2. A number checking test similar to the one in Army Beta

---

* The method of deriving the probability of deception when all tests are taken and none shows a loss of 3σ is given in the statistical supplement.

3. Cancellation of A's
4. The digit symbol substitution test
5. Making dots in small squares
6. Cancellation of single digit as in the Woodworth and Wells series

These will be adequately illustrated by the following samples:

TEST 1

Add each pair as fast as you can, moving across the page from left to right.

3 8	4 5	2 3	8 9	5 9	2 6	4 8	2 5	3 9	5 7	4 9	2 8	2 7	2 9
4 7	5 6	3 7	6 8	3 4	5 8	2 7	7 8	6 9	3 6	2 4	3 5	7 9	4 6
8 3	5 2	7 4	8 7	5 4	9 3	6 5	9 6	3 2	7 5	7 3	6 3	9 8	9 4
8 6	4 2	9 5	8 2	4 3	5 3	6 2	7 6	8 5	9 7	8 4	9 2	7 2	6 4

TEST 2

Look at each pair of numbers: Make a cross after every pair where the two numbers are not alike (as shown here):

907328	907329×	760023	760023
216540	216540	297500	297600×
856728	847628×	107910	107910
700035	70035×	864271	864271
380270	380270	915823	715823×

286090	289060	329865	329865	702645	702645	908701	908701
976534	976534	574052	574052	610124	611124	116872	116872
821004	821004	738216	783216	503763	503763	805794	805794
598362	598362	895422′	895422	921821	921821	248067	248067
774819	747189	635767	635767	869030	863090	753915	753915
612345	612345	942424	942424	274502	274502	310283	210283

TEST 3

Draw a line under every A (as shown here: MAGNOAARCAS).

GWBTBVKIKSCSAUEBCIWVABZSMDUBKLWHKHYCGYGK

NANNCBVBSAKOIUPEKCXVGSTVRIWYBYGKHAZLPBYO

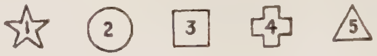
XAPYEXXHUFSBVDYDIAZLRSATZAZVFCOFSAIPTDOK

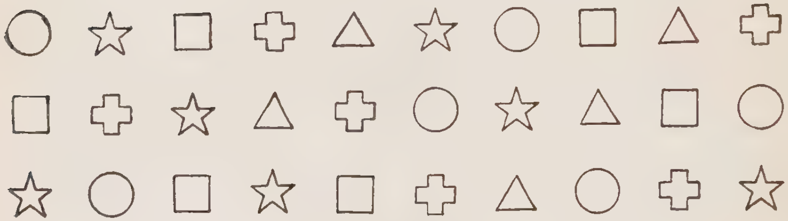
BBISKAKHXDYIUZRHVRZYSCIGECPOFKBICBMGFSDG

YHSRMVBLYICKZBMXFVBBIKUCBZLOGLVKGFMOATUN

TEST 4

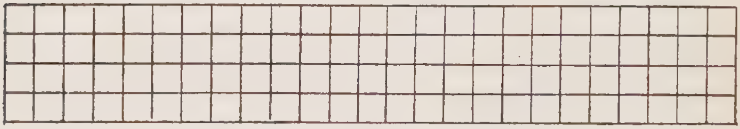
Work across the page from left to right beginning at the top. Do each figure as you come to it.





TEST 5

Put a dot in each square beginning at the top and working from left to right. Work as fast as you can. **Speed counts.**



TEST 6

Draw a line under every 4 on this page (as shown here: 264137 956378 419356)

983642	168379	694517	253914	745682	138923	729648
426357	372159	754936	297835	627519	786531	731469
654173	947386	589761	134852	146237	194526	936425
837162	691324	814536	326175	368792	549826	572194
458671	971648	479612	495683	784295	817243	916328

Test 4 copyrighted 1921, C. H. Stoelting Company. Used by permission.

The essential feature in the administration* is that each child takes each test three times and is allowed one minute for each trial on each test. The first two are given under "honesty" conditions. After these are completed they are called "practice" trials. On the third trial the pupils are allowed to score their own papers. Time is allowed for those who are inclined to be dishonest to add on more to their papers and thereby increase their scores unfairly. So this is really a triple testing technique using the same material each time.

---

* The directions for administration are in Appendix F.

It will be noted that this is a quite different kind of deception from that exhibited on the IER tests. There the dishonest pupil copies from a key or makes illegitimate use of it. Here he improves his score by adding on more marks after time has been called. When the tests are administered the pupils are given distinctly to understand that when time is called they must stop work, and that when the examiner gives instructions to score that means to score the work already done.

Tests using this material and technique have the following advantages: They are quick to administer. The entire time for the three trials on all the tests, together with time for directions, self-scoring, etc., is one school period of forty minutes. They do not require that the examiner return for a retest as the IER material does. They apply from the third grade up. There is so much material on every test that no one can do it all in one minute.

It has also this other advantage. It is test material that in no way resembles ordinary school examinations. Consequently dishonesty on these tests is less likely to be motivated by a suspicion that the scores will count in the pupils' grades. We should thus expect less cheating on these tests than on the IER tests. But what shows up here may turn out to be symptomatic of tendencies to cheat under a greater variety of conditions.

These tests are not, however, without certain disadvantages. First, considerable skill is required to give them. It is essential that all pupils work exactly sixty seconds on each of the first two trials. This means that the starting and stopping signals must be given on the dot, and that every pupil must start on the signal and stop on it. To achieve this result requires skill on the part of the examiner. Second, the scores are somewhat more difficult to interpret than the IER scores. This is a statistical matter which is given detailed consideration in Book Two.

Scoring the Speed Tests. The Speed tests were standardized just as were the IER tests. When the speed material was used for measuring deceptiveness the last trial was the one scored by the pupils, so that whatever falsification took place was roughly measured by the difference between the second and last trials. This we called Difference Two, or D2. Hence, in order to know how much to allow before regarding a given difference as an instance of cheating, it was necessary to determine the normal range of D2's between two tests when there was no scoring by the pupils. This is analogous to what we did in the case of the IER tests when we found what differences could normally be expected between two occasions on neither of which the pupils scored their own papers. A large number of children were given the tests without any opportunity to score their own papers, so that they had no chance to add on more answers after time was called. We thus found how much variation from one trial to the next was to be expected from children of the ages to be tested.

As before, our allowance was three times the standard deviation of the honest difference beyond the honest mean gain. This kept the probability that a " c " thus figured was a genuine case of cheating up to about 999 in 1000. For the fact score we were able to allow the following differences between the second and third trials without scoring the test a " c." A " c " was given for any differences greater than these:

1. Additions	13
2. Number checking	12
3. Underlining A's	14
4. Digit symbols	24
5. Dots	45
6. Underlining digits	18

For an amount score we used only the sum of the differences* and did not find an Xi score for the separate tests. The total Xi score, however, was found by the same method as that described for the IER tests, *i.e.*, we first reduced the differences to a common denominator by weighting each according to the standard deviation of the honest differences; then we allowed a certain amount as a total honest or normal gain; third, we divided the remainder, or the deviation from the normal gain, by the SD of the sum of the honest D2's.

---

* Weighted according to their SD's.

Illustrations from the records of one or two pupils will make this procedure clear:

Case 1, Age 10 Years, 8 Months

Tests	Trials			D2	Weighted D2		C's *
	1	2	3				
1	49	57	86	29	× 1	29	1
2	9	14	24	10	× 2	20	0
3	11	10	10	0	× 2	0	0
4	36	39	59	20	× 1	20	0
5	50	124	200	76	× $\frac{1}{4}$	19	1
6	23	32	51	19	× 1	19	1
Totals						107	3

Gain	107
Honest gain for age	26
	81
SD of honest gain	17.52
Speed Xi	4.6

Case 2, Age 10 Years, 11 Months

Tests	Trials			D2	Weighted D2		C's *
	1	2	3				
1	33	34	41	7	× 1	7	0
2	16	10	21	11	× 2	22	0
3	13	14	18	4	× 2	8	0
4	33	31	51	20	× 1	20	0
5	62	100	126	26	× $\frac{1}{4}$	7	0
6	28	28	46	18	× 1	18	0
Totals						82	0

Gain	82
Honest gain for age	26
	56
SD of honest gain	17.52
Speed Xi	3.2

* Based on the D2, not the weighted D2. The limits are shown above.

B. As Exhibited in Work Done at Home

For this purpose we used the IER Word Knowledge test, already described. One form was handed to the pupils at the close of the first testing period with instructions for them to take the test at home and bring it back the next day. They were told twice not to get any help on the test either from a dictionary or from a person. When the second testing period came, the equivalent form of this test was given along with the other three, with no answer sheet available. Cheating, of course, consists in getting the forbidden help.

C. As Exhibited in Athletic Contests

In addition to the ten general requirements for conduct tests which were outlined at the beginning of this chapter, there are three more which apply especially to efforts to measure deceptive behavior in athletics. These are as follows:

1. They should be approximately real contest situations. That is, the child should be placed in a genuine contest of some sort. Further, the contest should be social. If the pupil cheats he must be cheating a rival contestant rather than the teacher and must be conscious of this.

2. The factor of *social inhibition* should be eliminated as far as possible. Many contestants desiring to play unfairly will not do so because their opponents won't let them. Hence in the test situation the opponent must either be absent or else the situation must be such that he cannot readily detect the dishonesty. But if he cannot detect it neither can the experimenter. The only alternative is that the opponent shall be absent. Thus we must use individual test situations.

3. The behavior in question must be simple and easily recorded in quantitative terms. This means that games involving complex responses should be avoided.

1. The Methods Used. In selecting the tests for this part of the work we had two things in mind: first, meeting the above requirements; and second, securing at the same time a measure of physical ability in the same fashion in which IER tests give a measure of intelligence. Looking over the attempts to measure general physical ability, we found that Rogers* has done the most serviceable piece of work. We selected certain tests that he had used and adapted them to our purposes:

---

* Rogers, F. R., "Physical Capacity Tests in the Administration of Physical Education," *Teachers College Contributions to Education*, No. 173, 1925.

1. The dynamometer test. This is a little machine* for measuring the strength of one's hand grip.
2. The spirometer test. This is a measure of lung capacity.*
3. The pull-up or chinning test
4. The standing broad jump

These tests were administered in such a way as to meet the above requirements.

1. They constituted a real athletic contest. When the pupil entered the examining room he was told that the pupils of his school were having a " physical ability contest," that certain handicaps had been arranged so that all might have a chance to win a badge. Twelve badges were to be given, three for each of the four events. The three grades in each event were to be the usual light weight, middle weight, and heavy weight. These grades were determined by the customary procedure in the particular school tested. The badges were attractively designed. The boys' badges consisted of a metal bar and a ribbon; the girls' badges consisted of a ribbon only. Here are samples of the wording of the boys' badges.

Grip Champion	Lung Capacity	Pull-Up Champion	Broad Jump
Light Weight P.S. 000 1926	First Place Middle Weight P.S. 000 1926	Heavy Weight P.S. 000 1926	First Prize Light Weight P.S. 000 1926

These badges were on display in the examining room where the pupils could see them while taking the dynamometer and spirometer tests.

2. The factor of social inhibition was eliminated by making the

---

* We used Smedley's hand dynamometer and the Simplex dry spirometer with washable mouthpieces.

tests entirely individual. They were more than individual: they were private. That is, the pupil was first shown by the examiner how to read the instruments and how to record his performance and then left *entirely alone.*

3. The general procedure for administering these tests was as follows: First, a small table was provided which was out of sight of the examiner's table. The chinning bar and the broad jump mat were also out of view. The pupil was brought into the examining room and told that he was to take part in a physical ability contest. Its nature was explained and the badges exhibited. Then certain physical data were recorded on a four by six card. If the height and weight were not previously known from school records, they were taken. A sample of this record card is given here:

TESTS OF PHYSICAL ABILITY

Name ______________________ Age ________ Grade ________

Height _____ Weight _____ Date _______ School ______________

1. Dynamometer: 1st trial ______ 2d ______ 3d ______ 4th _____

5th _____ 6th _____ 7th _____ 8th _____ 9th _____ 10th _____

2. Spirometer: 1st trial ______ 2d ______ 3d ______ 4th _______

3. Chinning: 1st trial _______ 2d _______ 3d _______ 4th ______

4. Standing Broad Jump: 1st trial _________ 2d ____________

3d ____________ 4th ________________

The full directions for giving the physical ability tests are in the Appendix. In the case of the hand dynamometer the examiner demonstrated the way to proceed, and then had the subject try himself, showing him very carefully how to use the instrument, read the dial, and make his record on the card, at the same time urging him to do his very best. The examiner took mental note of the highest of the three trials made in his presence and recorded it later. He then said: "Do you understand how to do it? While I start the next boy, you go and try five times and record each trial on your card. Your best score is the one that counts.

Go over there now and do your best. Use the same hand (right or left) and work fast. As soon as you are through, come back and I'll show you the next test." The examiner then recorded the highest score made in his presence.

The spirometer directions were similar, except that there were only two preliminary trials and three final trials.

The pull-up test came next. Here the subject was tried out only once as the fatigue effect was considerable. The examiner made mental note of the number of times the subject chinned himself and recorded it later. In one school the bar was adjusted so that the subject could just reach the floor and thus give himself a boost contrary to the rules, but in the others it was stationary. After showing the subject what to do, the examiner said: "Now while I attend to the next boy, you go ahead and see how many times you can chin. You may have two trials. Remember what you did on each trial. The best record counts."

In the broad jump there were two preliminary trials with careful directions in jumping and measuring and each boy had four private trials, making his own record.

2. Scoring Methods. (*a*) *The Amount Score.* In all these tests the amount score was the difference between the highest of the practice trials and the highest of the self-recorded trials.* The use of this difference as a measure of the amount of deception requires some analysis.

In the case of the dynamometer test, previous work indicates that after three trials under coaching and urging it is not at all likely that anyone can improve in five succeeding trials, all with the same hand and following in rapid succession. There is a great fatigue effect. Hence a higher record on one or more of the five self-recorded trials than the highest practice trial, as noted by the examiner and recorded privately when the subject was not present, is evidence that deception has taken place. The amount of this difference includes both the factor of deception and the factor of errors of measurement, just as in the classroom tests.

---

* Of course the examiner did not know in the case of the dynamometer or spirometer whether the pupil pushed the dial forward with his finger and recorded the false score or just simply lied on his score card about his record. In either case it was deception and this is what we were trying to measure.

The three other tests are scored by the same technique. The fatigue effect, however, is not so great in the spirometer and broad jump as in the dynamometer and chinning tests.

(*b*) *The Fact Score.** Only honest scores were used in giving the prizes. In order to find the borderline between honest and dishonest performance, we followed a method very similar to those already described. The mean honest loss or gain between certain trials with each machine and in the pull-up and broad jump was allowed and the largest amount of honest difference in addition. The limits beyond which any difference was called a " c " are as follows:

Dynamometer	3 kilograms
Spirometer	25 cubic inches
Chinning	3 times
Broad jump	7 inches

D. AS EXHIBITED IN PARLOR GAMES

As in the case of contests, it was necessary to establish natural conditions. There would have been little advantage in merely repeating the " test " situation of the classroom type in either the contests or the parties, as behavior under such conditions had already been measured with a large variety of opportunities. What we were after here was a measure of the extent to which cheating was a function of total situations of a quite different character, where, in the case of the contests, serious individual competition entered into the motivation and, in the other, the atmosphere was just " fun," with the customary trivial prizes given at children's parties.

To secure this party atmosphere it was essential to have the children in groups rather than singly, as the chief part of the fun is the social character of the games. This placed a rather strict limit on the number of opportunities to deceive that could be offered in any single party.

---

* For details see Book Two, Chapter III.

Certain requirements for these opportunities needed constant emphasis:

1. The deceptive aspect of the behavior must be a matter of objective record, and not a matter of judgment on the part of an observer.
2. Each child must have the same opportunity to deceive as every other child.
3. The opportunities must be in games or stunts where the interest is high.
4. The deceptive aspect of the behavior must have low visibility so that, if one child cheats, the rest will not notice it and protest.

The Techniques Used. With the assistance of a professional recreational leader, a large number of parties were first conducted in order to standardize the procedure. A great many games and stunts were tried out, which it is not necessary to describe here. It was found that in the course of an hour and a half from thirty to fifty children could all be tested in four different games or stunts as follows:

(*a*) *A Peeping Stunt.* The coördination material previously described we had prepared either for classroom testing or for games.* As all the children tested with the party technique had already taken these tests in the classroom, we did not use them in any of the actual test parties.

(*b*) *Pinning the Tail on the Donkey or the Arrow on the Target.* Each child is blindfolded by a standardized bandage so adjusted that there is room to see the floor under the bandage. The technique here is of the "improbable achievement" type. The likelihood that a child will be able to get the tail or the arrow in the exact spot without peeping is remote. But if he uses his eyes and follows the lines on the floor boards and looks at the donkey or target when he gets to it, he can place the tail or arrow very accurately.

As each tail is pinned on it is removed again before the next child approaches, so he cannot guide his hand by feeling for the tails already pinned on. Each child is rotated three times before he starts for the donkey, to decrease the chance of honest success. As children are apt to question all correct performances and accuse one another of peeking, it is desirable to have this test in a room apart and to have only such children present as are actually engaging in the test. With at least two games going at once, four or five children can be present without interfering with one another.

---

* It would be desirable to duplicate these tests in the two types of situation as a measure of the effect of the total situation on the behavior.

The cheating score is a " c " if the child pins the tail or arrow correctly. The same score is used in choosing the winner for the game, except that approximations to the center are discriminated among those getting the tail or arrow near the proper point.

(*c*) *Bean Relay.* This is a modified potato race, using beans instead of potatoes, which we developed for this purpose after considerable experimentation. Each row has four boxes, the first empty, the second and third with three beans each, and the fourth with ten or more. If possible, five rows are run at once to give the atmosphere of contest. Each heat is thirty seconds, which is time enough for eight or more runs, that is, for eight or more chances to cheat. The rule is to pick up one bean at a time, and each runner has an observer who has a counter and records his runs. At the end of each heat the beans in each child's home box are counted and the sum is his score for the game. Obviously, since he is supposed to take only one bean at a time, the number of beans in the home box should correspond with the number of runs, which has been checked by the observer. If a child is found to have more beans than runs, this is evidence of deception and he is given a " c."

As in the tail-pinning game, the bean relay should be run in a separate room or a corner of the room in order that there may be no children present but those who are engaging in the heat, as observers would tend to inhibit the tendency to cheat or to direct attention to cheating if it occurred.

(*d*) *The Mystery Man.* This may be regarded as either a cheating test or a stealing test. The children are in a circle facing in. The Mystery Man passes around in back and places in each child's hand an object which the child is to identify without looking at it. When he thinks he knows what it is he goes to one of the helpers and reports. The helper then looks at the object, shows it to the child, and records whether or not he guessed right. The child is then told to take the object to a box in another room where all the objects are being collected to be used again.

Every alternate child is given a ten-cent piece, and the other children certain small objects. The procedure is of course repeated so that each child has the dime once. The objects may be either attractive and desirable or merely neutral in value, but somewhat hard to identify. In the former case there is the temptation to keep the object as well as the dime. In the latter case, only the dime is likely to be a temptation, which simplifies the test. In some cases it has been found practicable to give each child both a dime and an object at the same time. This avoids the necessity of repeating the performance, and also allows more freedom in disposing of either the dime or the object otherwise than by placing it in the receptacle.

As the box is in another room, it is perfectly possible for a child not to show up with the objects at all, but to start for the room and when out of sight slip the coin or object or both into his pocket or dress. But some will not do this, and so the box is so arranged that, even if one comes to it, provided he has two objects to deposit, there is no apparent way by which anyone will know whether he drops in both or only one. The box is solid toward the child with only a small slit through which he is to pass the objects. A helper sits near the box, with a sheet of paper on which he checks or records the number or name of each child as he comes to the box. But the box is open on the side toward the helper so he can see what is dropped in and make a cryptic note of it on his paper opposite the child's name or number.

The cheating or stealing score is " c " if the dime or object or both are not returned.

The complete plan for the standard party is printed in the Appendix together with such modifications as were found necessary under the restricted conditions met with in our actual testing.

METHODS FOR MEASURING THE STEALING TYPE OF DECEPTION

Here again it was necessary to conform to certain requirements in addition to the ten general criteria cited at the beginning of the chapter. These are as follows:

1. It must be a group situation.
2. Money must be used in a natural way or appear as a natural part of the situation.
3. There must be an opportunity to take all or some known part of the money apparently without being detected in the act.
4. The subject must feel that he is not merely being clever in getting away with the money but that he is actually stealing it from a particular person or institution.
5. It must be possible to check exactly what the subject does.

We used the stealing tests in two situations — party and classroom.

A. Stealing Exhibited at Parties

The Mystery Man test has already been described under the cheating type of deception and needs only to be listed at this point.

B. Stealing Exhibited in Classrooms

1. The Planted Dime Test. In connection with the administration of the Puzzle tests in one school a little box was given to each pupil containing several puzzles not all of which were used. In each box was a dime ostensibly belonging to another puzzle, which the examiner showed to the pupils but did not ask them to solve. This other puzzle required the use of a dime, but no mention was made by the examiner of the dimes in the boxes.

Each pupil returned his own box to a large receptacle at the front of the room. Check on what each pupil did was arranged for by numbering and distributing the boxes according to the seating plan of the class. The purpose of this test was to see which children would take the dime before returning the box.

2. The Magic Square Test. This is a puzzle and was given along with the other Puzzle tests already described. In this case, however, there was no possibility of faking a solution to the puzzle. The only deception involved was in not returning any or all of the coins that make up the puzzle.

The test material consisted of a handkerchief box six inches square, on the bottom of which we had drawn the design shown below, which is the bottom part of the Puzzle score sheet shown on page 57. There were in the box seventeen coins: 1 quarter, 4 dimes, 4 nickels, 4 pennies, and 4 Chinese coins, making a cash value of 89 cents. The Chinese coins were used because some coin of zero value was required for the solution of the puzzle.

Full directions are included in the Appendix along with the other Puzzle directions, but the essentials are as follows: After describing the puzzle, the examiner said: "You will see as you open the box that it contains a lot of coins. Take the coins all out and put them beside the box or keep them in your hand. On the bottom of the box you will see some circles around a square, three circles in each direction, making a place for nine coins in all. You have *more* than nine coins, unless there has been some mistake, so there will be more than enough to have one in each circle. But there is only one way to place them correctly in the circles; and this is to place them so that each row will add up to exactly the same amount as every other row, and to exactly the same amount as each diagonal, or cornerwise, row. I am not going to tell you what this amount is, nor just what coins will make it work. The

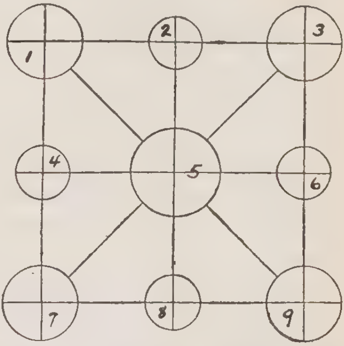
SCORE

If each of the six rows (1-2-3, 4-5-6, 7-8-9, 1-4-7, 2-5-8, 3-6-9) and the two diagonals (7-5-3, 1-5-9) adds to the same total, your score is 100.

If each of the six rows and one diagonal adds to the same total your score is 75.

If each of any four rows and one diagonal adds to the same total, your score is 50.

Any other arrangement is zero.



penny is called 1, the nickel 5, the dime 10, the quarter 25, and the Chinese coin 0. At the bottom of the score sheet at the left you will see the directions and can refer to them at any time. Now let's see who is bright enough to get this puzzle."

After from two to seven minutes had elapsed the examiner said: "Now you have probably done at least one of the three things described on the score sheet, so write carefully on the score sheet the value of the coins as you now have them placed in the box. As soon as you have done that pass in your score sheet."

Examiner then collected score sheets, thus apparently breaking all connection between the boxes and the pupils.

"Now put all the money back in the box, put the band around it, and we will collect it. Pass the boxes to the center aisle."

These directions were modified in various ways. In one situation, where only boys were being tested, the examiner said, "If you think it would be easier to solve this puzzle if you had more coins to work with, you are at perfect liberty to use any coins you may have in your pocket. The coins in the box are sufficient for one solution, but there are other possibilities. Only if you use your own money, write down carefully what you put in so you will leave in the box exactly what is there now." This provided a legitimate excuse for putting their hands in their pockets, but as it added one more source of error we did not try it again.

In another situation the pupils were brought from their classrooms to a vacant room for the Puzzle tests. The coin test came last. They were told to hand in their score sheets, take the coin box to the principal's office, and leave it there. This gave the pupils a chance to take the box of coins out of the examining room, and since, on finishing the test, they left either alone or in groups of two or three, they could easily have made off with the boxes, money and all. In order that they might know that they were unobserved, the attendant in the office was instructed to pay no attention whatever to those who came in to deposit their boxes.

Another modification, not changing the character of the test materially, adapted it for younger, but bright, pupils by offering for solution one of the easier puzzles adapted to the magic square, but involving the same coins.

Scoring the Magic Square Test. The fact score was simply whether or not any money was missing. The amount score was the total amount of money missing, not the number of coins.

In order to check each pupil's behavior it was necessary to identify the persons using the boxes and to count the money returned by each. Identification was effected by the use of a key number combination placed in the magic square design on the score sheet (see page 91).*

3. The Coin Counting Test. As the Magic Square test was too complicated for some of the younger children, a simpler plan was evolved. Each child was given a sheet of paper on which were printed some arithmetic problems involving the counting of money. Here is a sample:

What three (3) coins add up to forty (40) cents?

( ) quarters ( ) dimes ( ) nickels ( ) pennies

What three (3) coins add up to twelve (12) cents?

( ) quarters ( ) dimes ( ) nickels ( ) pennies

What three (3) coins add up to thirty-one (31) cents?

( ) quarters ( ) dimes ( ) nickels ( ) pennies

What three (3) coins add up to twenty-seven (27) cents?

( ) quarters ( ) dimes ( ) nickels ( ) pennies

Each box contained just the same coins as the Magic Square box, except for the omission of the Chinese coins. The pupils were told that it was a money counting test and that, in order to make it a real test, the coins were to be used to count with instead of writing on the paper.

---

* Each child wrote his name on his score sheet. On the design for the magic square were placed certain figures numbering the circles to correspond to the directions at the left of the design, but placed on the circles in accordance with a definite scheme as follows: Each circle is divided into four parts by the lines drawn through them. Figures placed above the horizontal line are significant. Of these one is always to the left of the vertical line. This is the first figure of the identifying number. The central circle is not used for this purpose, so this first figure might be anything from one to nine except five. At the right, above the horizontal line, might be placed either one or two of the figures numbering the circles. If one, this is the second figure of the identifying number. If two, the smallest is read first, giving an identifying number of

In this case, identification was effected by the following device: The arithmetic problems were mimeographed. A blur in one of the problems was purposely left so that it had to be filled in with pencil. These figures were made to correspond to figures placed on the bottoms of the boxes. The numbers on the boxes had a ¢ mark after them, furnishing thus a red herring for the child who wanted to speculate concerning this number. As the child placed his name on the sheet he identified his box at the same time and they could then be collected separately.

METHODS FOR MEASURING THE LYING TYPE OF DECEPTION

A. Lying to Escape Disapproval

If lying is defined as misstatement of fact with intent to deceive, it becomes at once very difficult to test, because intentions are not directly known. But if lying is regarded only as making a false statement instead of a true statement when the truth is known to the one making the statement, it is not so difficult to measure. Some of the techniques already described have this element in them. The overstatement test is in a sense a lying test. Or, in the case of the Puzzles tests, if the pupil does not fake the solution to the puzzle but gives himself credit on the score sheet for having solved it, he is really lying rather than cheating.*

three figures. Using this plan, the number of the box corresponding to the design on page 91 is 234.

As the figures on each box were placed to correspond to the figures on its accompanying score sheet, and as no two were numbered alike, each box became identified with a child as soon as his name was written on the score sheet. The score sheets of course were assembled with the boxes and they were passed out together. But they were collected separately.

* There is a sense in which lying is basic to all deception except stealing and it is ordinarily an accompaniment of this form of dishonesty also.

The first method which we used to detect lying was employed in connection with the IER tests. A week or more after these tests were given in any group an examiner returned with a set of general questions of a more or less personal nature. This was called the Pupil Data Sheet. Toward the end of the sheet the following questions were asked:

33. Did you ever cheat on any sort of test?
34. Have you cheated on such tests more than once?
41. Did you actually do this test all alone without getting help on it?
42. If you did get help, was it from some person?
43. Or was it from a book or dictionary?
44. Did you understand at the time that you were not to get help in doing the test?
45. On some of these tests you had a key to correct your paper by. Did you copy any answer from the keys?
46. Do you think that to do so is really cheating?
47. On any of these same tests did you copy answers from other pupils' papers?
48. Do you think that to do that is really cheating?
56. If you did copy on any of these tests that you took a little while ago, or received any help you should not have received, just why did you do so?
57. Have you answered all the questions honestly and truthfully?

It will be noted that questions 33, 34, 56, and 57 have only a general significance, whereas questions 41, 42, 43, 45, and 47 are entirely specific. Questions 44, 46, and 48 serve as a check on the other answers, but in this connection no other use was made of the answers to 46 and 48.

There were two ways of handling the results of these questions. First we recorded the admissions of those who said that they cheated on the IER tests. Then each pupil was given an honesty score or a truthfulness index.

The second way of handling the answers was to secure the lie index or dishonesty score. As this is based on the cheating tests, it is no more reliable than they. Furthermore, only the cheaters are included, as the others had nothing to lie about. But the facts as given are objective. The method of scoring is illustrated by the samples shown below. In this table the signs + and − represent the answers "Yes" and "No" respectively to the questions referred to by the numbers at the tops of the columns. A blank means that the question was not answered.

CASES	SEX	QUESTIONS										C's SCHOOL	C HOME	LIE INDEX	
		33	34	41	42	43	44	45	46	56	57			SCHOOL	HOME
1	M	−	−	+	−	−	+	−	+		+	0	0	0	0
2	M	−	−	+	−	−	+	−	−		+	2	1	+ 4	+ 4
3	F	+	+	+	−	−	+	+	+	+	+	3	0	− 4	0
4	F	+	+	−	+	+	+	−	−	−	+	2	1	+ 1	− 1
5	M	−	−	+	−	−	+	−	+	+		1	0	+ 2	+ 1

The column marked "C School" gives the fact score or number of times the subject cheated on the first three opportunities, which were offered in school. "C Home" refers to the test which was taken home.

Case 1 shows an unequivocal record. No cheating was discovered and none was admitted. Case 2 consistently denied cheating although the record shows he cheated twice in school and once at home.

For purposes of scoring, questions 33 and 34 are treated as one. Questions 41, 42, and 43, which refer to the home opportunity, are treated as one. In question 57 an opportunity is given for stating whether the previous answers have been given honestly. If they have not been honest answers, as shown by the record, then any affirmative answer to this question is one more lie. No answer at all is regarded as a lack of frankness equivalent to an affirmative.

Question 56 asks for a motive. If a motive is given, this constitutes an admission and a truthfulness credit is given for it. Frequently the pupil simply says, "I did not do it," which constitutes another denial. "45" is simply a statement of fact as to whether the keys were used improperly or not.

Thus one can tell three general truths and make an admission with reference to both the school cheating and the home cheating, or he may tell three general lies and make two specific denials, one for school and one for home. The handling of the school and home separately gives, therefore, a maximum lie index of plus four and a maximum truth index of minus four.

Case 1 is neutral, as already seen, and so has a neutral lie index. Case 2 denies everything, and omits 56, which means the maximum lie index of plus four on each of the two situations. Case 3 cheats only on the school situations and admits it both specifically and generally, saying that she has cheated, has cheated more than once, denies any cheating at home, admits copying from keys at school (45), regarding this as cheating (46), gives the reason for doing it (56), and says she has answered truly (57) as she apparently has. So she has on the school opportunity the maximum truth score of − 4, and the neutral score on the home opportunity.

Case 4 admits cheating in general and specifically so far as the home opportunity is concerned, but denies cheating at school although she was caught at it on two tests. She also says she did not cheat, on question 56, and says she is telling the truth on 57. This is therefore a mixed score. For the home opportunity, 33 and 34 count − 1; 41, 42, and 43 count − 1; 56 counts +1; 57 is not counted as it is partly true and partly false since the girl is partly truthful and partly lying. These add to −1. For the school situation we have the −1 on 33 and 34, and +1 on 56, 0 on 57, and a +1 on 45 because this is a denial. This makes a school lie index of +1.

Case 5 denies cheating in general, which is of course an untruth and equals +1, denies it on 45, which is also a lie and equals +1, admits it on 56, which is −1, and does not answer 57, which is +1. Hence the school lie index is +2. He does not cheat on the home test, which would leave his home lie index 0, but for the fact that 57 is left blank, which gives him a +1 for the home lie index. . . . .

B. Lying to Win Approval

The second method is like the first in that it consists of a series of rather personal questions. There are many specific acts of conduct which on the whole have rather widespread social approval, but which at the same time are rarely done. The questions revolve around situations of this sort.

The test is in two forms. Each form contains 36 questions.

CEI ATTITUDES SA

Form One

Name____________________________ Date________________

School___________________________ Grade_______________

Answer the following questions by underlining YES or NO. If your answer is YES, draw a line under YES. If your answer is NO, draw a line under NO. Please answer every question.

1. Did you ever accept the credit or honor for anything when you knew the credit or honor belonged to someone else? . . . . YES [✓ NO] 1.
2. Did you ever act greedily by taking more than your share of anything? . . . . YES [✓ NO] 2.
3. Did you ever blame another for something you had done when you knew all the time it was your fault? . . . . YES [✓ NO] 3.
4. Do you usually report the number of a car you see speeding? . . . . [✓ YES] NO 4.
5. Do you always preserve order when the teacher is out of the room? . . . . [✓ YES] NO 5.
6. Do you report other pupils whom you see cheating? [✓ YES] NO 6.
7. Did you ever pretend to understand a thing when you really did not understand it? . . . . . . YES [✓ NO] 7.
8. Have you ever disobeyed any law of your country or rule of your school? . . . . YES [✓ NO] 8.
9. Do you speak to all the people you are acquainted with, even the ones you do not like? . . . . . [✓ YES] NO 9.
10. Do you usually call the attention of people to the fact that you have on new shoes or a new suit or dress? . . . . YES [✓ NO] 10.

11. Are you always on time at school or for other appointments?	[✓ YES]	NO	11.
12. Do you always smile when things go wrong?	[✓ YES]	NO	12.
13. Do you usually pick up broken glass in the street?	[✓ YES]	NO	13.
14. Do you stick with your gang even when they go wrong?	YES	[✓ NO]	14.
15. Do you usually sneeze whenever you feel like it?	YES	[✓ NO]	15.
16. Did you ever take anything (even a pin or button) that belonged to someone else?	YES	[✓ NO]	16.
17. When you see other children fighting, do you stop them?	[✓ YES]	NO	17.
18. Do you always accept the decisions of the umpire without question?	[✓ YES]	NO	18.
19. Do you always obey your parents cheerfully and promptly?	[✓ YES]	NO	19.
20. Even when others will not play your way, do you keep on playing anyway?	[✓ YES]	NO	20.
21. Do you try to take an interest in some things you do not like?	[✓ YES]	NO	21.
22. Did you ever say anything about your teacher that you would be unwilling to say to her face?	YES	[✓ NO]	22.
23. Did you ever feel that you would like to "get even" with another person for something he had done?	YES	[✓ NO]	23.
24. Do you often give away anything which is very dear to you or which you have obtained at a sacrifice?	[✓ YES]	NO	24.
25. Did you ever pretend that you did not hear when someone was calling you?	YES	[✓ NO]	25.
26. Did you ever hurt or cause pain to a dog, cat, or other animal?	YES	[✓ NO]	26.
27. Do you go to church and Sunday school every Sunday?	[✓ YES]	NO	27.
28. Do you keep a diary regularly?	[✓ YES]	NO	28.
29. Do you read the Bible every day?	[✓ YES]	NO	29.
30. Were you ever rude or saucy to your parents or teacher?	YES	[✓ NO]	30.
31. Do you usually pick up papers and trash that others have thrown on the schoolroom floor?	[✓ YES]	NO	31.

32. Do you usually correct other children when you hear them using bad language? . . . . [✓ YES] NO 32.
33. Did you ever do any work on Sunday or go to the movies or a baseball game on Sunday? . . . YES [✓ NO] 33.
34. Did you ever break, destroy, or lose anything belonging to someone else? . . . . YES [✓ NO] 34.
35. Did you ever tell on another child for something wrong he had done? . . . . YES [✓ NO] 35.
36. Do you always do to-day things that you could put off until to-morrow? . . . . [✓ YES] NO 36.

CEI ATTITUDES SA

Form Two

Name____________________________ Date______________________
School___________________________ Grade______________________

Answer the following questions by underlining YES or NO. If your answer is YES, draw a line under YES. If your answer is NO, draw a line under NO. Please answer every question.

1. Do you always apologize when you have been rude or discourteous? . . . . [✓ YES] NO 1.
2. Did you ever accept the credit or honor for anything when you knew the credit or honor belonged to someone else? . . . . YES [✓ NO] 2.
3. Do you always care for the property of others even though it has not been placed in your care? . . [✓ YES] NO 3.
4. Did you ever act greedily by taking more than your share of anything? . . . . YES [✓ NO] 4.
5. Did you ever blame another for something you had done when you knew all the time it was your fault? . . . . YES [✓ NO] 5.
6. Do you throw waste paper on the floor when there is no waste paper basket handy? . . . . YES [✓ NO] 6.
7. Have you ever disobeyed any law of your country or rule of your school? . . . . YES [✓ NO] 7.
8. Are you always on time at school or for other appointments? . . . . [✓ YES] NO 8.
9. Do you always congratulate your opponents? . . [✓ YES] NO 9.

10. Do you usually "give in" when others are against you? . . . . YES [✓ NO] 10.
11. Did you ever carve your name on your desk? . . YES [✓ NO] 11.
12. Did you ever write your name in the books you use which belong to school or library? . . . . . YES [✓ NO] 12.
13. Do you always sing when others are singing? . . [✓ YES] NO 13.
14. Do you usually pick up broken glass in the street? [✓ YES] NO 14.
15. Do you usually report to the police the numbers of cars you see speeding in the city streets? . . . [✓ YES] NO 15.
16. Do you always finish your work before you play? . [✓ YES] NO 16.
17. Did you ever take anything (even a pin or button) that belonged to someone else? . . . . YES [✓ NO] 17.
18. Did you ever say anything about your teacher that you would be unwilling to say to her face? . . YES [✓ NO] 18.
19. Do you always keep every secret that you promise to keep? . . . . [✓ YES] NO 19.
20. Do you keep quiet when older persons are talking? [✓ YES] NO 20.
21. Do you always leave the table hungry? . . . . [✓ YES] NO 21.
22. Did you ever feel that you would like to "get even" with another person for something he had done? YES [✓ NO] 22.
23. Did you ever pretend that you did not hear when someone was calling you? . . . . YES [✓ NO] 23.
24. Did you ever hurt or cause pain to a dog, cat, or other animal? . . . . YES [✓ NO] 24.
25. Do you give something to every beggar who asks? [✓ YES] NO 25.
26. Do you usually correct another pupil when you hear him using bad grammar? . . . . [✓ YES] NO 26.
27. Do you spend some time each day acquiring a liking or taste for good music, fine art, and good literature? . . . . [✓ YES] NO 27.
28. Do you pray at least once a day? . . . . [✓ YES] NO 28.
29. Do you ask others to join your Sunday school? . [✓ YES] NO 29.
30. Were you ever rude or saucy to your parents or teacher? . . . . YES [✓ NO] 30.
31. Do you usually pick up papers and trash that others have thrown on the schoolroom floor? . [✓ YES] NO 31.
32. Do you usually correct other children when you hear them using bad words? . . . . [✓ YES] NO 32.

33. Did you ever do any work on Sunday or go to the movies or a baseball game on Sunday? . . . YES [✓ NO] 33.
34. Did you ever break, destroy, or lose anything belonging to someone else? . . . . YES [✓ NO] 34.
35. Did you ever tell on another child for something wrong he had done? . . . . YES [✓ NO] 35.
36. Do you always do to-day things that you could put off until to-morrow? . . . . [✓ YES] NO 36.

There are, no doubt, many children who could answer some of these questions quite truthfully as scored above. But the child who could answer thirty-six truthfully would be a pious fraud. The test is scored in such a way as to give one point credit for each question answered in the approved way. For example, affirmative answers of questions 4, 5, 6, and 9, and negative of 1, 2, 3, 7, 8, and 10 on form one are all scored as receiving one point each. This gives the highest score to the greatest amount of falsification. The question is, How big a score should any pupil have before he is accredited with having lied? This again is a matter of probabilities.

In order to find the limit of honest answers, we gave the test to several classes in a school where we had found almost no deception, explaining to the children that we really wanted to know what children like themselves did in the situations listed in the test. No names were written on the blanks. In spite of (or perhaps because of) these precautions, this supposedly honest population as a matter of fact reported scores higher than those found in some of our most dishonest populations. We therefore gave up the hope of getting straight answers from children and turned for help to a graduate class in educational psychology, the members of which were interested in the moral aspects of education. We asked these men and women to think back over their early adolescent and pre-adolescent years and answer the questions in such a way as to represent what was probably true of their own childhood. The number claiming a perfect childhood was so small that it did not need to prevent our determining a workable limit of honest performance. Just as for the tests already described, we placed this at three times the standard deviation of the " honest " group, beyond the mean of the honest group. Thus for form one, any child scoring 24 was given a " c," and on form two a " c " was recorded for any pupil reaching a total score of 28.

The amount score used was either the total number of " right " or conventional answers given, or an Xi score found as usual by dividing the subject's deviation from the honest mean by the standard deviation of the honest scores.

So much for the various methods used by the Inquiry to measure the tendency to deceive in the ordinary life situations of normal children. We shall next sketch rather briefly the application of these tests to real situations and the general results secured from the use of each technique.

CHAPTER IV

APPLICATION OF TECHNIQUES AND GENERAL RESULTS

One of the principles on which these studies in deception are built is that they shall be centered on age groups as young as possible. As has previously been suggested, it would be highly desirable to begin such studies with infancy and investigate the processes leading later to various kinds of social conduct. But this has been out of the question here because of limitation in time. Moreover, since this research is largely on a statistical rather than a clinical basis we have developed techniques to be applied to children when found in groups.

The most accessible groups are school classes. Here attendance is required, and regular, and the population is less selected than is the case with clubs and Sunday schools. Consequently we cut our tests to fit general school situations or situations connected with schools. All our techniques are applicable in grades five to eight inclusive. Some of them may be used in grades as low as the third, and some will work up through high school and even in the college ages. But as we shall presently see, most of our work has been done in grades five to eight.

In selecting school populations for trying out these techniques and collecting data on deception, we have endeavored to use representative samples of the following social groups:

1. Various social, economic, and cultural levels
2. Various intelligence levels within grades three to twelve
3. Various types of community
4. Various degrees of socialization or levels of character (delinquents excepted)
5. Various national or racial groups
6. Various occupational groups
7. Various religious groups
8. Both sexes

We have also tried without uniform success to crisscross these groups so that each one will offer samples well distributed through each of the others. In discovering possible national differences, for example, it is essential that the national groups shall each represent the same social, economic, cultural, and religious types. Our total population has been too small to accomplish cross-sampling as adequately as must be done before certain important questions relating to the comparison of social groups can be answered.

DESCRIPTION OF SCHOOL POPULATIONS STUDIED

Letters A to O refer to public schools. P to S are private schools. T to W are schools used only for standardization purposes.

A. A suburban community of 10,000 population with about 1000 children in the public school grades five to eight. This community is composed socially of the ultra-wealthy on the one hand and the very lowest in the economic scale on the other, with a fair representation of the middle classes. Furthermore, there are many nationalities and religions. There are five elementary schools, grades one to six, one intermediate school, grades seven to eight, and one high school.

B. In a mid-western city of 200,000 about 1000 children in grades five to ten were tested. The fifth- and sixth-grade children were in two elementary schools in two different geographic sections of the city. The other grades were in one large junior high school which draws from a general district covering about half the total population of the city.

C. A public school serving a metropolitan population which on the whole is above the average in social and economic conditions. Above grade four this school was almost entirely restricted to boys at the time we did our work there. The average intelligence quotient is above normal, varying from 110 to 120.

D. Another group of public school children who because of broken homes are situated in an institution for such children located in a suburban community. This is a rather unique group in that they represent the low end of the scale in the way of home background and economic level. The average intelligence of this group is less than normal.

E. A vocational high school in a fine section of a large suburban city.

F. A public school in a congested metropolitan area, recent immigration stock, mostly Russian Jews, girls only, grades four to eight.

G. A public school in the vicinity of F, mixed, grades four to six only.

H. As above, but boys only, grades four to six.

I. As above, but girls only, grades four to eight.

J. As above, boys and girls, grades four to six, and girls only, grades seven and eight.

K. An orphanage, from which a selected group of brothers and sisters was used.

L. An experimental public school associated with a normal school in a suburban community, grades four to seven.

M. A regular village school in the same community as L, grades four to seven.

N. Certain classes in a university junior high school in a mid-western city.

O. Some two hundred children in a large mid-western city contrasted with two hundred in surrounding rural districts.

P. A private school, grades one to six, having mixed sexes, and grades seven and eight, only girls, located in a large city and drawing from the upper social levels. The average intelligence quotient is well above 100.

Q. Another city private school of very much the same level as P but with smaller classes and mixed sexes running all the way through.

R. A boys' private school located in a suburban community. The grades run from the fourth up through high school. The social level is high and the intelligence is high.

S. Three small private schools in Pennsylvania.

T. A metropolitan school of the better type in a residential section.

U. A metropolitan public school drawing from a foreign and negro population. The average intelligence and the social and economic status of the homes are below the normal level.

V. A metropolitan elementary school.
W. A metropolitan junior high school.

Table III shows how many pupils were tested with each type or battery of test in the various school populations. The more accessible and more unselected groups received most of our attention, and some groups were tested for standardization purposes only.

TABLE III. (*A*) PUBLIC SCHOOLS

Approximate Number of Pupils in Each School or System Subjected to the Deception Tests

Test	Total	A	B	C	D	E	F–J	K	L–M	N	O
IER											
1–4 tests	6675	1000	940	800*		900	2185	200	250		400
Duplicating											
7 tests used twice	295			30	265						
Speed											
8–12 tests, 2 forms each	6295	1300		285	275	900	2610		350	175‡	400
Coördination											
Squares	3940			165	265	900	2610†				
Circles	3775				265	900	2610†				
Mazes	4300				265	900	2610†		350	175‡	
Puzzles											
Pegs	245				245						
Fifteen	220				220						
Weights	380			160	220						
Contests											
Grip	615	135		235	245						
Lungs	615	135		235	245						
Pull-up	335	15		170	150						
Jump	615	135		235	245						
Parties											
3 tests	490			215	275						
Money											
Planted Dime	265				265						
Coin Counting	75				75						
Magic Squares	355			165	190						
Lying											
Pupil Data	2570	900	940	730							
SA test	1315	840		285	190						
Total population	8150	1500	940	800*	275	900	2610†	200	350	175‡	400

* 240 tested twice. † 300 tested twice. ‡ Tested twice.

TABLE III. (*B*) PRIVATE AND STANDARDIZING SCHOOLS

Test	Total	P	Q	R	S	T	U	V	W	E
IER										
1–4 tests	1540	250*	170	175	305	640				
Speed										
12 tests, 2 forms each	1595	345		170			315†	350	230	185†
Puzzles										
3 tests	165			165						
Money										
Magic Squares	160			160						
Lying										
Pupil Data	300				300					
SA tests	250	250								
Total population	2715	345*	170	175	305	640	315†	350	230	185†

* 120 tested twice. † Tested twice.

Table IV gives the same facts by grades in terms of separate tests administered rather than pupils tested. These figures indicate our concentration on grades five to eight.

TABLE IV

APPROXIMATE NUMBER OF DECEPTION TESTS ADMINISTERED, BY GRADES

Test	Total	III	IV	V	VI	VII	VIII	IX	X	XI	XII
IER, 1–4 tests	45,092		210	10,116	9932	9808	9426	3436	1630	396	138
Duplicating, 7 tests used twice	2072		154	595	399	476	322	77	49		
Speed											
8–12 tests, 2 forms each	99,276	6552	12,468	16,500	17,652	20,672	17,740	6612	636	168	276
Coördination											
1–3 tests	15,618		1911	2796	2804	3875	3029	1182	21		
Puzzles											
1–3 tests	1378		93	274	247	287	215	65	92	42	63
Contests											
3–4 tests	2175		33	99	527	614	715	159	28		
Parties											
3 tests	489			43	150	123	119	40	14		
Money											
1 or 2 of 3 tests	851		29	162	217	182	149	35	43	13	21
Lying											
1–2 tests	4643		1120	980	973	955	385	191	39		
Total tests	171,594	6552	16,018	31,565	32,901	36,992	32,100	11,797	2552	619	498

Our data are derived from a population of some 10,865 pupils, who gave an average of four hours apiece to this part of our test program.

As our work involved many separate tests, some printed, some mimeographed, some requiring the use of objects, and some needing no material, data on these points may also be of interest. Table V shows these facts by types of material used.

TABLE V

Types of Test Used to Measure Deception

Printed Tests	Folders	Pages
IER	45,186	134,382
Speed	17,158	167,725
Duplicating	1,180	3,540
Pupil Data	3,000	12,000
Score Sheets	750	750
Coördination	14,661	14,661
Total	81,935	333,058

Mimeographed Tests	Folders	Pages
Coördination	1000	1000
Duplicating	600	900
Coin Counting	100	100
Lying	1800	3600
Total	3500	5600

Manufactured Tests	
Fifteen	75
Weights	70
Magic Squares	200
Total	345

Purchased Tests	
Reading	375
Peg Boards	75
Total	450

Apparatus
Dynamometer
Spirometer
Mat
Horizontal bar

APPLICATION AND RESULTS

So much for the scope of the testing. It remains now to show in somewhat greater detail how these various methods worked out in practice. This will require that we refer to each technique once more, but this repetition will not be a net loss for the reader inasmuch as his understanding of the entire report will depend in large part on his grasp of the methods employed.

We shall now take up our methods chronologically, beginning with our first technique, which involved the use of Thorndike's IER material for measuring levels of intelligence.

A. THE IER TESTS

1. Preliminary Experimental Testing. It is one of the elementary principles of good testing to keep the test situations as much alike for all subjects as possible. In the case of intelligence tests, the primary factor in the situation is the problem to be solved, although the children are doubtless influenced also by the extent to which the ambition to make a good score is aroused, by their confidence in their own ability, by the heat of the room, and by their physical condition. When testing the tendency to deceive, these secondary influences loom larger in the total situation, and may indeed be primary factors. To the list already given we should add the pupil's attitude toward the teacher and the examiner, and for the problem to be solved we should substitute the kind of opportunity to deceive which the test offers. To keep all these matters constant from pupil to pupil would be too much to expect, but we felt we could keep them relatively constant from room to room.

In order to try out and standardize our method of administration, we set up a preliminary experiment. The variables we consciously attempted to control were the teacher, the examiner, the behavior of the examiner in the room, the opportunity offered to be dishonest, the motive under which the pupil was operating, and the type of test material used. School system A was used for this preliminary work.

(*a*) *The Teacher.* We saw no way to make classroom teachers alike, and therefore excused them from the room during the testing. It is generally supposed that the amount of cheating that takes place in a room is partly a function of the teacher's personality, and there is no doubt that the effect of this influence continues when the teacher is not present. This factor, therefore, we could not entirely control. The best we could do was to have the examiner take sole charge on the occasions when deception was possible.

(b) *The Examiner.* As we were obliged to use many examiners at one time, and could not therefore keep this factor absolutely constant, we used trained examiners and coached them carefully in the procedure. The factor of strangeness was kept constant by using different examiners for the two or more occasions on which a group was tested.

Such differences in the personalities of the testers as might affect the amount of cheating we could not eliminate, but a rough check on what took place in our experimental testing revealed no significant differences for groups. What differences among individual pupils were due to the personality of the examiner we have no means of knowing.

When expert examiners were not available, we used trained teachers, coaching them for the particular work on hand.

(c) *The Behavior of the Examiner.* Mimeographed directions were provided, and these were discussed in advance of the testing. In addition, suggestions were made as to manner, the amount of freedom to give the pupils when they were scoring their own papers, and the like. The examiners reported their experiences in the first efforts and the results were incorporated in the revised directions subsequently adopted.

(d) *Opportunity, Motive, and Test Material.* It will be recalled that the IER tests use four different kinds of material: an arithmetic test, the answers to be written at the margin; a sentence completion test, the answers to be written in on blank lines; an information test, the answers to be underlined; and a word knowledge test, the answers to be indicated by numerals placed in the margin. It was necessary to associate with each of these different types of material the various opportunities to deceive offered in school situations, and the various motives under which children ordinarily do their school work. Also each opportunity had to be associated with each motive.

In the suburban system used for this preliminary work there were five elementary schools scattered about the town, and one intermediate school consisting of grades seven and eight. Realizing the possibility that age and community background might affect the amount of deception, we endeavored to subject each grade and each type of school to all the different combinations of opportunity with which we were experimenting.

The opportunities presented to each child were as follows:

Opportunity 1. An answer sheet or key, giving all the answers to the questions on the test, was passed out after the test had been taken. As the sheets were handed out the examiner said: "Now I am going to pass out a key or answer sheet to each of you which gives the correct answer for each question and you are to correct your own papers. Put a C after each answer that is correct and a cross (X) after each answer you get wrong. Pay no attention to the ones you skipped. Count the number of C's. This is your grade. Put this number at the upper right corner of the front page of the test."

Opportunity 2. A key or answer sheet was passed out with the test. When the test and the key to it were passed out the examiner said: "Now I am going to pass out a key or answer sheet with each test so you can correct your own papers. The key is on the typewritten sheets. Keep it under your paper until you have finished. Is that clear?"

Opportunity 3. Copying from one another. No keys were passed out at all, but during the test the examiner either left the room or busied himself with a newspaper or desk work, paying no attention to the pupils except to preserve quiet.

Opportunity 4. Securing illegitimate help at home. This opportunity was always attached to the Word Knowledge test which was taken home. This test was chosen because help could be secured from the dictionary or another person. It was thought that this would offer more equal chance for cheating than any of the other tests. The time was so arranged that this test came just as school was closing. After the directions for doing the test were fully explained the examiner said: "Time is passing rapidly, so we shall take this test home and do it there. Do the test all by yourself, and don't get any help from anyone, or even from the dictionary. Do it to-day and bring it back to-morrow. Is that all clear? Do it to-day and bring it back to-morrow, and don't get any help on it."

The motives we attempted to arouse were those in constant operation in the child's everyday experience: (1) personal achievement, (2) individual competition, (3) group competition, (4) helpfulness. To have a check on these we tested several groups with no attempt at motivation, but with a standardized routine procedure.

The personal achievement motive was given as follows: Just before the first test was passed out the examiner said: "We are going to have some tests to-day which will enable you to see for yourself just how well you are getting on. No one in the class but yourself will know what you make on these tests, but you will be told how your own mark compares with the class average on each test." The essentials of this formula were repeated just before each of the four tests was passed out.

The formula for the individual competition motive was: "We are going to have some tests to-day to find out which pupils are doing the best in this class and in other classes. As soon as possible I will report to you in order the names of those who get the ten highest scores on each test. If you can't be at the head on one test, perhaps you can on another. Work hard and get on one of the honor lists." The essentials were repeated each time just before the test was passed out.

The formula for group competition was: "We are going to have some tests to-day to see how this grade compares with others of the same grade in other schools and in this school. Is this a pretty good class? Do you think you could make a better score than any other class of your age? When I report your class average I'll give you also the averages for some other classes of this same grade so you can see just how you stand. No individual scores will be reported." (Repetition as before.)

The formula for helpfulness was: "To-day we want you to help us make some tests. All tests of this sort are made with the help of the children. You can help us a great deal by showing what you can do on the tests. When they are perfected they will be given to hundreds of children. The scores will not be reported to you, but you may write what you think of each test as you finish it. We want you to do the best you can." (Repeated in substance with each test.)

The formula when no motivation was attempted was: "We are going to have some tests to-day. When the papers are passed out they will be fully explained."

Thus we had four tests, four motives, and four opportunities. Our problem was to rotate these among the twenty-three classrooms of school system A so as to get a fair picture of the relative influence of each on the practice of deception. For all but two groups we kept the motive constant for all four tests. In all cases we associated the vocabulary test with opportunity 4. In the case of the three other tests we associated each with each of the three other opportunities, getting five out of the six possible combinations as follows:

Opportunities and Tests

Test:	1	2	3
Opportunity 1	1	2	3
Opportunity 2	2	1	3
Opportunity 3	2	3	1
Opportunity 4	3	1	2
Opportunity 5	1	3	2

Full details of this preliminary work will be found in Book Two.* The main results are as follows:

(1) *Effect of Motive on Cheating.* The attempt to control the amount of deception by varying the motive was not successful. We do not mean to say that motives make no difference. But statements such as those we quoted from the experimental directions did not induce significant differences in the average amount of deception exhibited. The children used the answer sheets in order to boost their scores quite as much under the influence of

---

* Chapter III.

what we called the helpfulness motive as under what we called the individual competition motive. As we shall have occasion to point out later, this is an illustration of the enormous strength of the school drive, or interest in grades, which swallows up or discounts anything anyone can say to the children when the test is being administered.

(2) *Effect of Opportunity on Cheating.* The next question is whether the kind of opportunity offered makes any difference in the amount of cheating. The opportunities were: (1) having an answer sheet at hand after the test was taken; (2) having an answer sheet at hand during the test; (3) having no answer sheets but with conditions so arranged that copying from another pupil was possible; and (4) using the dictionary or otherwise getting help at home.

In the first place the pupils evidently did not copy much from one another. If they did, it did not materially improve their scores over what they would have been without such copying. There are several possible explanations of this. If they did not copy, it may have been because they had been taught specifically not to do so. There is probably no corresponding drill in refraining from the use of other aids. Again a pupil will not copy from someone in whose ability he has no confidence, or if the person whose paper he wants to use keeps his answers covered. If any did copy, the results need not have benefited those who did to such an extent that the average score of the whole class was raised by it on the first day. The number of attempts at copying might have been estimated by comparing the number of identical errors on the day when copying was possible with the number of identical errors when copying was not possible. Since the scores were not affected, we did not trouble to do this and definitely abandoned copying as a useful opportunity in measuring deception by the double testing technique.

The two opportunities of which the pupils made most use were 1 and 4, having the key at hand during the test, and having access to help at home. The second, having the key at hand after the test was taken, comes in between.

(3) *Effect of Test Material on Cheating.* No matter what opportunity is offered, there is a constant relation between the amount of deception and the type of material used. In order of amount Arithmetic comes first, Word Knowledge second, Completion third, and Information fourth, although the difference between the last two is slight. In the case of the Completion test, cheating is somewhat troublesome, requiring the writing of several words to an answer. In contrast, the Arithmetic or Word Knowledge test requires the writing of only one or two digits as an answer. On the Information test the answer is given by underlining a word or phrase, but the test is very short and so offers less room to deceive. It is quite possible also that Arithmetic, being very common school material, has been the occasion of deception before, and is more closely associated with school marks. Certain habits of practice and motive may therefore be attached to this material but not to the more unusual information or completion type of test.

2. The General Procedure as Revised. Profiting by our first experience, we revised our testing technique. In the first place, we omitted all attempts to motivate cheating by repeating a formula. A colorless routine statement was adopted: "We are going to have some tests to-day. When the papers are passed out they will be fully explained. Be sure you have a sharpened pencil." In the second place, we attached the most favorable opportunity for cheating to the tests on which cheating was easiest. Thus we associated opportunity 2 (key passed with test) with Arithmetic. This allowed for one extreme. The other extreme was also provided for in attaching the hardest opportunity to the test on which there is least likelihood of cheating. Thus we put opportunity 1 (key passed out after test is taken) with Completions. Then between these two we put Information with opportunity 2, and left the Word Knowledge test as it was. The scheme then appears as follows:

Arithmetic:	Key passed out with tests (with the request that it be concealed until needed for scoring)
Completion:	Key passed out after test was taken

Information:	Key passed out after test was taken
Word Knowledge:	No key but the test taken home and done there

The revised directions are printed in full in the Appendix.* From this scheme we expected that Arithmetic and Word Knowledge would yield the heaviest cheating, Information next, and Completion next. Having the difficulty of cheating in school scaled in this way gives us a better insight into the child's character. If the child has only slight inclination to cheat, he may cheat on Arithmetic because it requires very little effort or temptation to do so. It takes more effort to cheat on Information. Finally it requires considerable effort to cheat very much on Completion when the key is passed out after the test is given.

Certain other essential features of the original procedure were retained in the revised directions, namely:

1. The answer sheets and cheating opportunities were always given on the first day of testing. The first day the tests were given in an afternoon school session, so that the Word Knowledge test directions could be given just before time for the close of school for the day.

2. At least one day and two nights elapsed between the first and second day's testing.

3. The tests were given in the same order always: Arithmetic, Completion, Information, Word Knowledge.

4. On the first day the teacher was always absent from the room. On the second day all tests were given in class and closely supervised; the teacher and the examiner were both present.

3. Typical Results of the IER Technique. Complete tables showing the statistical returns by populations and groups are given in Book Two. We present here simply one illustration to show the nature of the material. We take two classes, one that averaged very high and one that averaged very low in honesty. Figure 7 shows the facts as to the per cents cheating. Figure 8 shows the facts as to the amount scores or Xi scores.†

---

* We adhered to these directions in all subsequent use of the IER material.

† See discussions in Chapter III.

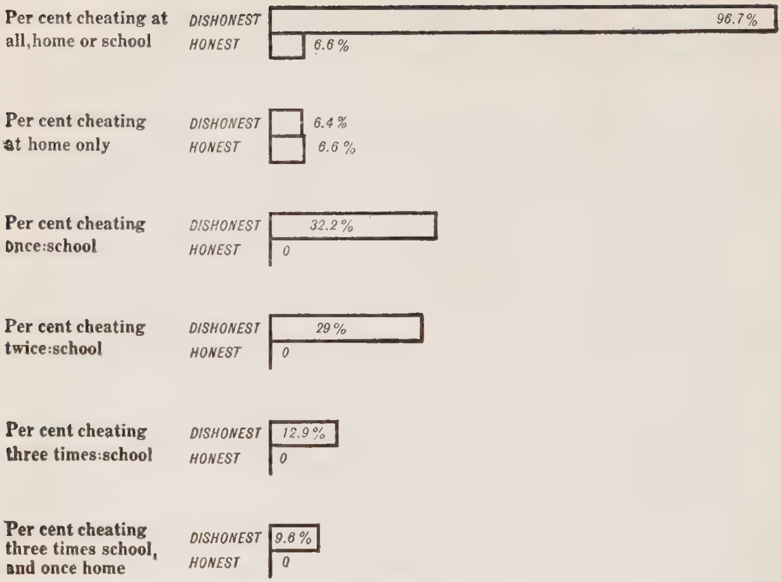


FIGURE 7

Per Cent Cheating on IER Tests in Two Typical Groups, One Especially Dishonest and One Especially Honest

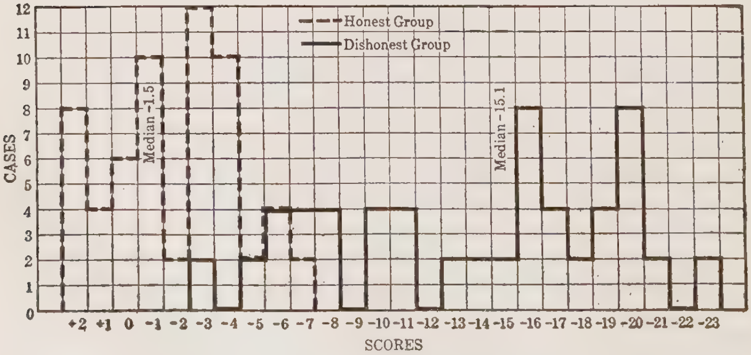


FIGURE 8

Graphic Distribution of Typical Amount Scores on IER Tests

B. The Speed Tests

The double testing idea was used also with the speed material described in Chapter III. These tests were administered in schools to children in grades three to twelve with the identical technique, except that the third-grade children omitted two of the six tests and the fourth-grade children one. The complete directions are printed in the Appendix.

As the six tests could be given three times and the last one self-scored all in forty minutes, it was a simple matter to maintain uniform conditions, for the same four or five examiners could handle practically all the groups; and in the case of population A, where thirty-three groups had to be tested in one day, ten examiners sufficed for the entire program.

The tests were printed in two folders. The first folder contained two sets of the six tests and the second folder one set. As the examiner entered the room to test a class the teacher left, so that there was always the uniform condition of a stranger administering the test. The first folder was passed without comment save this introductory statement: " To-day we are to have some tests which will show how fast and accurately you can do certain kinds of work. Tests like this were used in the army and are now used in civil service examinations. In taking these tests it is necessary to do exactly what the examiner says. Do nothing to the papers until you are told what to do."

As the success of the procedure depended on accurately starting and stopping each test, the examiners had to be trained to watch their time and to give the pupils the snap and vim required for carrying the thing through. Everything during the period was consequently handled in a brisk and businesslike way. Practice in starting and stopping was given even in writing name, grade, age, etc., and the first minute for each test afforded further familiarization with the procedure before the last two trials were attempted, which were used for measuring deception.

The directions for each test were as follows: Say to the pupils: " Look at Test 1 at the bottom of the page. This is an additions test. When I say ‘Go,’ begin at the upper left corner and add as many of these examples as you can. Work across the page from left to right. Write the answers under the lines. Work fast. Ready? Go.” In one minute say: “Stop. Pencils up. Turn the page with your free hand. We will try this again. When I say ‘Go,’ add as many of these examples on page 2 as you can. Ready? Go.”

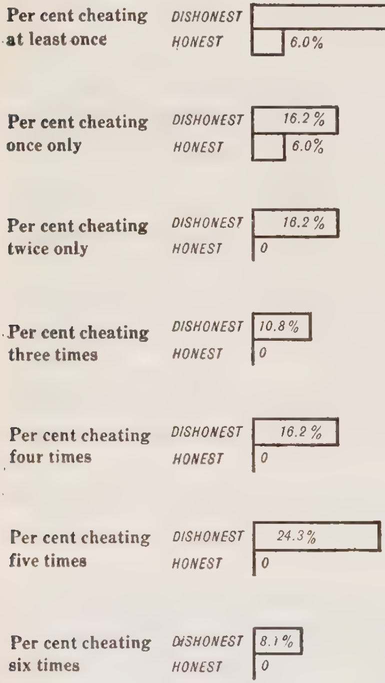


FIGURE 9

PER CENT CHEATING ON SPEED TESTS IN TYPICAL GROUPS, ONE ESPECIALLY DISHONEST AND ONE ESPECIALLY HONEST

In one minute say: “Stop. Pencils up. Turn to Test 2,” etc. . . . Infringements on time, if pounced on avidly, were practically eliminated.

After the second set of tests was completed the examiner said: “This was for practice. These tests are just like the ones you have just practiced on. You are now ready to do your very best. Remember that you must keep your pencils up until I say ‘Go.’ Start when I say ‘Go’ and stop when I say ‘Stop.’ ”

Thus the final trial was well motivated. Signals were clear and sharp and obedience was insisted upon. After each test was completed the pupils were asked to score their own papers as follows: “Stop. Pencils up. When I say ‘Go,’ count the examples you got right. You can easily tell the right answer. Your score on this test is the number you got right. Put this number in the lower right corner where it says 'Score.' Ready? Go." In two minutes or less, say: "Stop. Pencils up. Turn to Test 2," etc. . . .

It is at this point that pupils so disposed had the opportunity of adding on more examples, crossing out more A's, underlining more 4's, etc., beyond the point at which they left the test when time was called. While they were counting, it was almost impossible for anyone to see that additions were being made and of course it was not clear to the pupils that there would be any way of finding out about it. They wanted a good record and did not realize that they had already done as well as they were likely to do on the preceding trials which had been collected.

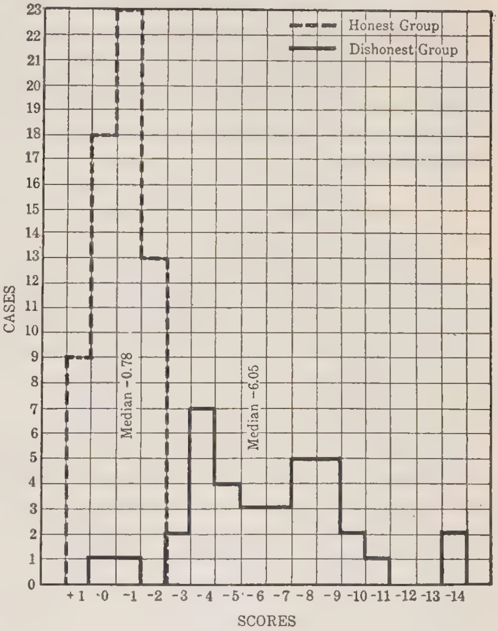


FIGURE 10

Graphic Distribution of Typical Amount Scores on Speed Tests

Pupils almost always enjoyed taking these speed tests. They are good practice for them and a pleasant relief from school routine. There is a kind of excitement in the intensity of a mechanical speed test, especially when everyone in the room is also working as fast as he can. The tests also constitute an excellent measure of this sort of ability.

The detailed results of the application of the Speed tests are given in Book Two.

Typical examples are shown graphically in Figures 9 and 10. These correspond to Figures 7 and 8 except that the percentage figures here refer only to school tests as none of the Speed tests were taken at home. There were six chances to cheat on the speed material and the per cent cheating once, twice, three times, etc., is shown for an extremely dishonest room and an extremely honest room.

There is noticeably less cheating on the Speed tests than on the IER tests of the arithmetic type, where an answer sheet is available all through the test. The one who deceives must want to badly enough to go to some trouble and add on a few more answers. If he does this for some time after the rest have stopped he becomes conspicuous.

C. The Coördination and Puzzle Tests

1. Coördination Tests. The Coördination tests are printed in Chapter III. The procedure in administering them is given fully in the Appendix. The essential feature is to secure the coöperation of the pupils in the task as a serious undertaking rather than as a stunt or game. Here again the manner and skill of the tester is taxed to the utmost in many groups.

The visibility of these tests is not low enough to warrant our attempting to use them above the eighth or ninth grades, and even here the atmosphere was sometimes unfavorable on account of the apparent childishness of the requirement that the eyes be closed. To an intelligent boy of fifteen the Circles test would be obviously impossible of complete accomplishment. A simpler form such as used by Cady would be better adapted to children of twelve or over.

The Coördination tests require thirty minutes to administer. Amount scores and cheating scores as described in Chapter III are reported fully in Book Two.

The significant thing about this technique is that a very large proportion of all children will open their eyes to guide their pencils, being apparently unable to resist the tendency even when to yield to it is unfair. As it is easy to squint without being noticed, this test offers little external resistance to deception.

2. Puzzle Tests. It was felt to be important to give the pupils an opportunity to deceive with objects or in connection with the use of objects as well as with pencil and paper. It was fortunate that we decided to do this; for we found, as will be discussed later, that the tendency to cheat is intimately tied up with the particular kind of opportunity presented. What will stimulate one child will leave another child untouched. A pupil may feel quite free to falsify his arithmetic paper, who will not fake a solution to a puzzle.

Puzzles were chosen as objects because of the high interest of most children in reaching solutions and the widespread impatience children usually exhibit in the process of manipulation and search. Large numbers of puzzles were studied and tried out, resulting in the selection of the three described in Chapter III.

Here even more than in the case of the Coördination tests, it was necessary to have most careful testing done on account of the tendency of the pupils to go wild over the puzzles. The investigators consequently administered all these tests themselves and often had an assistant in the room to help care for the bulky material. The Magic Square money test, which was intended to test honesty in handling money, was usually given at the same time, so that a single score sheet sufficed for recording everything. A facsimile of the sheet used is printed part on page 57 and part on page 91.

It is clear that a pupil might falsify by faking a solution or by merely claiming a solution on the score sheet. In either case deception has occurred.

When these tests were first administered it was thought necessary to use buffer puzzles easy of solution so as not to allow the pupils to be discouraged by the difficulty of the tasks but rather to establish the mental set: "These puzzles can be solved." The buffer puzzles could be explained by the tester so all could see how easy they were. We found, however, that the pupils became too excited over so many interesting toys. On first opening the little box containing a selection of puzzles the children would fairly shout with joy. Since no problem of discouragement arose in actual practice, the buffer puzzles were later omitted.

The order in which the puzzles were given varied from group to group as it was not practical to make enough for more than two or three groups to use at the same time and consequently rotation was resorted to. To what extent this affected the results is not known.

In the case of the Peg Board and Fifteen puzzle, large models were used * to facilitate explanation of the procedure. The proper way to handle the pegs and blocks was demonstrated on the models so that the element of misunderstanding was reduced to a minimum.

Both the amount and the fact scores as described in Chapter III are shown in Book Two. A glance at the tables will reveal that this test also is effective in differentiating both individuals and groups.

D. The Athletic Contests

After the general method to be followed had been planned, two experienced men† were selected to administer the contests. Beginning with a small group at school C these men worked the procedure down to certain standardized essentials which could then be adapted to different situations. These are fully described in Chapter III.

Each test had to be given to one pupil at a time with an allowance of about twenty minutes per pupil. The examiners could keep two or three going at once as there were four tests in all, and while one pupil was working on the machines, another could be jumping or using the bar.

Such difficulties as arose were not due to any lack of interest on the part of the pupils, although in a few cases there was evidently no desire to compete or to display physical prowess. No other pressure was brought to bear on the pupils to do their best, as it was the contest situation that was being measured as a stimulus to deception.

It was soon found that in most cases the girls could not chin even once, so this test was usually omitted in their case.

In situations of this sort, which are intended to be, and are, very serious from the standpoint of the pupils, great care needs to be exercised to fulfill all promises made and to enter with entire

---

* Made for us at school D by the teacher of manual arts.

† A. G. Truxal and G. S. Sheppard.

sympathy into the program from the pupils' standpoint. In awarding the medals in one school, for example, it was found that two boys tied for a lung capacity prize. We followed our rule and awarded the prize to the smaller of the two boys, both of whom of course belonged in the same weight class. Later one of the pupils told the principal that the other boy was somewhat crippled. Note of this fact should have been made on our records, but with the information now in our possession we could do no less than have a duplicate medal made for this boy. He was of course greatly pleased to receive it as medals for physical ability had not often come his way.

For similar reasons we found it necessary to test *all* the pupils in comparable groups even though for our purposes we needed the records for only a few. Otherwise the idea of a school contest could not be carried out. In testing these additional cases we kept all under close supervision as our interest here was in the discovery of ability rather than the measurement of deception; and in awarding prizes only the " honest " scores of the pupils tested for deception were utilized.

The tests proved quite satisfactory both in administration and results. Amount and fact scores are given in Book Two.

E. The Party Tests

The administration of the test party is described fully in Chapter III and in the Appendix. All the parties were conducted by a professional recreational leader * with the assistance of her pupils and sometimes of members of our own staff. The play atmosphere made it difficult to maintain the conditions required for objective testing and doubtless there was occasional laxity in substituting opinion for recorded fact in the case of pinning the tail on the donkey. As the tests proceeded, however, the technique was improved and simplified so that it turned out fairly well.

Deception in a game is generally recognized to be quite a distinct sort of behavior frequently engaged in just for fun as a part of the spirit of the occasion. This bantering type of deception, however, is not the real article, for in most cases part of the fun is to be found out. With children, parties are usually more serious affairs and cheating is frowned upon even when it is not actually prevented as it is in the case of contests.

---

* Madeline L. Stevens, Director, The School of Play and Recreation, New York City.

The party thus stands midway between the classroom, where prevention of deception by pupils is rare, and the athletic contest, where deception is prohibited, if discovered, by public opinion.

It would have been better if our parties could have been conducted entirely away from the schools. It did not prove possible, however, to secure the attendance of the children at any other place. Social periods in the case of school C were utilized, and at school D, a twenty-four hour institution, the children's Friday evening social hour in their cottages was turned over to our party. The modifications in the party made necessary by this limitation on space and time are noted in the Appendix.

Only fact scores are available for the party tests. Each child had two opportunities to cheat and one to steal. The tests worked well. The results appear in Book Two.

F. The Tests for Measuring the Stealing Type of Deception

1. Classroom Situations. The classroom does not often afford opportunities to steal money. Consequently our tests suffer somewhat by their abstraction from real life situations. This may in part account for the infrequency with which money was actually taken on these classroom tests.

On the other hand, it may be argued that the essence of the situation was having access to money that could be taken apparently without detection. But again such situations usually arise or are arranged for in solitude. Theft is not usually a gregarious offense. The group, consequently, although possibly either unaware of what was going on or, if aware, unsympathetic* with the culprit, furnished a subtle inhibition not easily to be overcome.

---

* The class group is not often a gang which includes petty larceny among its approved activities.

The classroom money tests were given along with the Puzzles. In the case of the Planted Dime, which was simply placed in each box of puzzles as part of a puzzle which was not used at that time, only five dimes in a population of 260 in school D were removed.

The Coin Counting for younger children was not given as a puzzle but as a test.

The Magic Squares was itself a puzzle the solution of which could not be faked. The puzzle was made up in part of actual coins which could easily be slipped into one's pocket or dress before the puzzle was returned. The results of the money tests for two populations are given in Book Two.

2. Out-of-classroom Situations. In addition to the classroom situation, the more natural atmosphere of the party was chosen for another stealing test called the Mystery Man, described in Chapter III. This was certainly not open to the criticism of artificiality made above on the classroom test.

In the case of the Mystery Man, as was noted in Chapter III, those taking the money did not for the most part go near the box to deposit their "object" but kept both coin and article — where both were used at the same time. In this respect the act was typical of an act of theft, the thief keeping out of sight as much as possible. The results are given in Book Two.

G. The Tests for Measuring Lying

1. Lying to Escape Disapproval. As was pointed out on page 95 of Chapter III, there are two ways of handling the answers to the pupil-data questions which give the pupil a chance to admit or deny having cheated if he has done so. One is to consider only admissions. Before reporting typical admission figures it would be well to repeat the questions utilized for the measurement of lying:

33. Did you ever cheat on any sort of test?
34. Have you cheated on such tests more than once?
41. Did you actually do this test all alone without getting help on it?

42. If you did get help, was it from some person?
43. Or was it from a book or dictionary?
44. Did you understand at the time that you were not to get help in doing the test?
45. On some of these tests you had a key to correct your paper by. Did you copy any answer from the keys?
46. Do you think that to do so is really cheating?
47. On any of these same tests did you copy answers from other pupils' papers?
48. Do you think that to do that is really cheating?
56. If you did copy on any of these tests that you took a little while ago or received any help you should not have received, just why did you do so?
57. Have you answered all the questions honestly and truthfully?

It will be remembered that questions 33, 34, 56, and 57 have only a general significance, whereas questions 41, 42, 43, 45, and 47 are entirely specific. Questions 44, 46, and 48 serve as a check on the other answers.

A few records of the replies* to these questions will make it easier to understand how they were used. The following are taken from the records of schools A and B:

QUESTIONS:	**33**	**34**	**41**	**42**	**43**	**44**	**45**	**46**	**56**	**57**	CS	CH
	−	−	+	−	−	+	−	+		+	1	1
	−	−	+	−	−	+	−	+		+	1	0
	+	+	−	+	+	−	+	−	+	+	1	X
	−	−	+	+	−	−	−	−	−	+	2	0
	−	−	+	−	+		−	+	−	+	1	0

CS = School cheating
CH = Home cheating
X = No test returned

---

* As noted in Chapter III, the sign + means "Yes," −, "No," and a blank, no answer.

Characteristic differences are seen between those who do not and those who do cheat, the more honest group having a typical "truth profile" as follows:

QUESTIONS:	33	34	41	42	43	44	45	46	47	48	56	57
	−	−	+	−	−	+	−	+	−	+	−	+

This typical response stands out clearly when the zero C's or non-cheaters are grouped as from the following class:

QUESTIONS:	33	34	41	42	43	44	45	46	47	48	56	57
1	−	−	+	−	−	+	−	+	−	+		+
2	−	−	+	−	−	+	−	+	−	+	−	+
3	−	−	+	−	−	+	−	+	−	+		+
4	−	−	+	−	−	+	−	+	−	+		+
5	+	−	+	−	−	+	−	+	−	+	−	+

Contrasted with this is the record of those who cheated twice in the same class:

QUESTIONS:	33	34	41	42	43	44	45	46	47	48	56	57
6	+	−	+	−	−	+	−	+	−	+	−	+
7	+	−	+	−	−	+	−	+	−	+		+
8	+	−	+	−	−	+	+	+	−	+		+
9	+	−	+	−	−	+	−	+	−	+		+
10	−	−	+	−	−	+	−	+	−	+	−	+

Some clearly deny the fact of having cheated, as in case ten; others tell some truths and some falsehoods, as in case eight; while others own up completely.

From these records it was possible to secure a corrected list of cheaters, adding to the list of those actually caught by our technique those who did not cheat enough to reach the limit of 3 Xi but who nevertheless admitted using the key or getting help at home.

On the school tests fewer admitted getting help than on the home tests. In one system (B) the average per cent admitting cheating in school was sixteen, whereas the average per cent admitting getting help unfairly at home was sixty-one.

Chapter III tells how the lie index was secured, and the necessary tables are printed in Book Two.

This technique grew out of our own situations and is of course unstandardized. Any further applications would need to be adapted to the local conditions and circumstances of the testing.

2. Lying to Win Approval. The SA lying tests were administered along with a number of others just as an ordinary test. The two forms are printed in full in Chapter III, and the results appear in Book Two. There is some doubt as to what is tested here, but the administration of these tests offered no particular problems and the scoring was quite simple.

CHAPTER V

THE VALUE OF THE TECHNIQUES FOR MEASURING DECEPTION

Nothing has so far been said to establish the truth of the statement that these tests we have been discussing really measure deception, or that they measure it consistently. What reason is there to suppose that differences among individuals and groups are not due to some feature of the test procedure? And can we be sure that if we go back and measure these same individuals again with these same tests or their equivalents the results will be at all comparable to what we have found? Before entering upon any extended interpretation of the data gathered it is essential that these questions be answered. Stated formally they are: (1) How accurately do these tests measure what they claim to measure? (2) How consistently do they measure anything? Stated technically, (1) What is the validity of the tests? and (2) What is their reliability?

In the measurement of physical conditions, changes, and objects, we are accustomed to the use of devices which appear to be absolutely valid and reliable. A good thermometer, for example, measures temperature accurately. The degrees we read are so closely related to changes in temperature that any given change in the latter is accompanied by a given change in the former. The thermometer does not measure partly temperature and partly barometer pressure and partly the direction of the wind. It is a valid instrument.

But even with a thermometer we know that inaccuracies do occur. No two bath thermometers we buy in a store are likely to read exactly the same. It is exceedingly difficult to make them accurate — perfect devices for measuring temperature. They are never *absolutely* valid. Clinical thermometers, for example, are often accompanied by a slip of paper showing the amount of correction to be made in the readings at different levels in order to approximate the exact temperature.

Furthermore, these physical instruments are so nearly unchangeable that we feel no hesitation in asserting that they always measure the same thing in the same way. A pound of sugar weighed to-day on one pair of scales will weigh a pound to-morrow on the same scales. Our foot rule always measures a foot. Our gas meter always lets through exactly the same amount of gas for every quarter we put in. If it does not (and of course no one doubts that it does!) it is not reliable. As a matter of fact it probably does not. Nor is your foot rule exactly the same length to-day as it was yesterday. Only by the most carefully guarded conditions does the "standard" length, kept in the museum of the Bureau of Standards, remain relatively unaffected by general changes in atmospheric conditions. Our measuring devices are only approximately reliable. In the conduct of experiments involving exactingly minute weights or sizes this is sometimes a source of great error in computations.

Let us take up first the problem of the reliability or constancy of the instrument.

RELIABILITY

Before any mental tests were made, one who wanted to measure any sort of mental work was in precisely the position that we should be in if we wanted to measure the length of a pile of wood and had no standard units in terms of which to state the results. We might get around the difficulty by picking up a stick and counting the number of times it would be necessary to lay it down in order to cover the length of the pile. The results could not be stated in units other than the stick itself, which would have to be produced if we wanted to communicate to anyone else any idea of the length of the pile.

To make sure of the results we secured the first time, we might lay the stick down along the pile several times. Sometimes it would come out exactly even, sometimes a little short, sometimes a little long. Our results would contain errors. Is the difference due to some change in the pile, or in the stick, or to the fact that we are careless and do not lay it in a straight line, introducing therefore elements of height as well as length? To settle the matter we might first exercise greater care in keeping the stick horizontal and in a vertical plane, so that it would measure only length and not height or breadth. Doing this we might find that we actually could repeat exactly the number of stick lengths required to compass the pile. We could conclude therefore that

1. the pile does not change in length;
2. the stick does not change in length;
3. the stick is a reliable instrument for measuring the pile.

The procedure in mental testing has been of this empirical character. It was discovered by repeated experiments that in the case of intelligence tests certain specific stimuli would secure approximately the same responses in the same individual if the interval between two applications of the stimuli were not too great. This fact furnished scientific evidence for the common observation that intelligence is a relatively fixed trait. But in establishing this as a usable working hypothesis the uniformity of results with these tests also gave evidence of the capacity of the particular stimuli used to secure uniform results on separate occasions. To revert to our analogy: The pile (intelligence) does not change; and the stick (the test) does not change in its power to measure the pile. Since in the case of testing, the subject is a highly complex organism making active response to a highly complex situation, the analogy of the pile and the stick cannot be pressed very far. The possibility of variation in the general test situation is very great. In the long run and for large groups these variations tend to balance one another, but it has so far proved impossible to make two measuring instruments in the field of psychology as identical as two thermometers recording exactly the same temperature. As in the case of the imperfect measures of the pile of wood, the results of mental tests contain "errors of measurement."

The errors or fluctuations to which most attention is given in testing are due to such facts as these. First, taking a test leaves a certain practice effect so that on repetition of the test the behavior of the subject is changed from what it otherwise would have been. Second, such factors as the mood of the examiner, the mood of the subject — his health, ambition, etc. — the quality of the atmosphere are never twice alike. Third, if two tests are used, one for one day and the other for the repetition, these are not capable of eliciting from each individual at each point exactly the same response as was secured from the previous test. However, when the responses for a whole group are lumped together, the two tests may be found to be, for the group, identical, since for each subject who does a little better there is one who does a little worse.

In the case of intelligence and most forms of school achievement there does not seem to be much change in the subjects over short intervals, but in the case of character tendencies, common observation asserts that there is greater variation in performance from time to time, even over very short intervals. Apparently one's emotional set materially influences what one does in adjusting himself to other persons and consequently in what one utters as his opinion or reveals as his attitude, whereas the same emotional condition has much less power to affect one's behavior on an intelligence test. It would appear to be much more difficult in the nature of the case, then, to establish the reliability of methods for testing character, since the chance alterations in the mood and attitude of the subject loom up so large in their effect on the results.*

We are consequently obliged to recognize in our test results several types of error: (1) practice effect and errors of measurement involved in the material that is used, such as arithmetic test material; (2) variability in the trait that this material is supposed to measure, *e.g.*, arithmetical ability; (3) variability in the tendency of the individual to change his response because of the extraneous stimulus we have introduced, as the presence of a key to get answers from; and (4) practice effect and errors involved in the measurement of this tendency.

---

* Of course, if a technique for measuring emotional set could be produced, this could be employed to ascertain whether this fact remained the same on the two or more occasions of testing.

The duplicating technique was used for the purpose of eliminating one of these sources of error, namely, that due to incapacity of the material to measure its correlative ability with absolute accuracy. This, as will be remembered, was accomplished by the simple expedient of making a copy of the papers of the pupils and then counting the changes made in them when they were scored with a key. In the case of the IER tests and Speed tests it was necessary to measure the practice effect and chance errors of measurement involved before it was possible to tell how much of a pupil's score was due to the several types of error we have just named. This procedure is discussed in detail in Book Two.

For present purposes it is necessary only to summarize these results rather briefly. The problem is: To what extent are our deception tests vitiated by errors of measurement of the sort discussed? In general and test for test, we are able to measure deception almost as consistently and with almost as little error as we are able to measure intelligence. Just as one test is an insufficient and unreliable measure in the case of intelligence, so one test of deception is quite incapable of measuring a subject's tendency to deceive. That is, we cannot predict from what a pupil does on one test what he will do on another. If we use ten tests of classroom deception, however, we can safely predict what a subject will do on the average whenever ten similar situations are presented.*

But even if we use fewer than ten such tests, this does not mean at all that our results are valueless. Fortunately, there are statistical devices for getting rid of the errors of measurement already referred to. These devices do not apply to individual scores, but only to computations based on large numbers of such scores. For such researches, therefore, as are reported subsequently in this volume, for which the score of no particular individual is of importance but only the general trends of large groups, it is possible to satisfy all statistical requirements although using a much smaller number of tests than would be necessary for predicting the behavior of an individual.*

---

* Ten tests of the IER type would yield a reliability coefficient or self-correlation of .90.

VALIDITY

Let us turn now to the second of the two problems with which this chapter deals, namely, How completely do these tests measure what they claim to measure? The water meter claims to measure the cubic feet of water used by a household. It does not claim to measure the flow of an electric current. It is a valid instrument to the extent that it accurately measures the amount of water used. But how do we know that the dial records on the water meter actually represent cubic feet of water used? The meter has been tested against some other way of measuring the water. Possibly the meter is attached to a tank the volume of which is computed from its dimensions. This is filled with water and the meter adjusted so that the readings on the dial will tally exactly with the *known* amount of water in the tank.

If we apply this same procedure to tests, we have to find some

---

* The following table may assist the reader familiar with statistical terms without making it necessary for him to turn to the elaborate treatment of this problem in Book Two. All the r's except the last are predictions from the intercorrelation of the separate tests rather than self-correlations of the same tests repeated.

Reliabilities of Techniques Used for Measuring Deception

1. Copying from a key or answer sheet (3 tests)	.871
2. Copying from a key or answer sheet; duplicating technique (7 tests)	.825
3. Adding on more scores (6 Speed tests)	.825
4. Peeping when eyes should be shut (3 Coördination tests)	.721
5. Faking a solution to a puzzle (3 tests)	.750
2 tests, Pegs and Fifteen puzzle	.620
6. Faking a score in a physical ability contest (4 tests)	.772
7. Lying to win approval[1]	.836
8. Getting help from a dictionary or from some person on one test done at home	.240

[1] The reliability of this test is doubtless affected by the fact that part of the items are common to both forms.

other way of measuring the variable which the test claims to measure, and check the test against this independent result. The test corresponds to the meter and what we need now is the tank. In test making this independent measure of the thing which the test is supposed to measure is called the "criterion." Our own tests purport to measure various types of conduct commonly called dishonesty, deceit, unfairness, and the like. To determine how well this is accomplished we also must have a criterion or some quantitative description of this conduct in the children whom we have tested.

As criteria of this sort psychologists have sometimes used the judgments or ratings of persons who know the subjects who are being tested. In building the army intelligence tests, for example, officers were asked to rate or rank their men in the order of their intelligence. These ratings or rankings, representing the opinions of the officers, constituted one criterion against which the tests were checked. A test which would give high rating to those rated high by the officers and a low rating to those rated low was a good test.

It is very difficult to build up a trustworthy empirical criterion for character tests. In our particular case what we want to know is the honesty, or dishonesty, or tendencies to deceive, of the pupils whom we have measured. How are we going to find this out apart from the tests? There are two or three things we can do.

First, we can get the opinions of teachers, parents, and other children concerning the dishonesty or deceitfulness of this or that child. If a child is definitely known to be deceitful, or dishonest, by teachers, parents, and other children always and on all occasions, then we should expect him to cheat on our tests; conversely if a child is known to be honest always, everywhere, by everyone, then we should expect him to be honest on the tests. But in actual practice we get into trouble right away. Children are deceptive on some occasions and not on others; they are honest in certain situations and not in others. Neither the ratings nor the tests take *all possible* situations into account. It would seem to be necessary, then, to have the subjects judged or rated for the specific types of honesty or dishonesty which the tests measure.

A second thing that might be done is to gather conduct records on the children tested. In some schools and some institutions careful conduct records are kept. These might be used as a criterion, or as one component of a more complex criterion. We have not found actual records in our schools which include data on deceptiveness, but in one case the children were regularly graded in honesty.

In the third place, we might ask the children themselves what they thought about it. Do they think that getting help from a dictionary is cheating when they were told not to get such help? Do they think that using an answer sheet for improving their scores is cheating?

We have done something with each of these methods and will now present the results.

A. VALIDATION BY RATINGS

We found it very easy to get the opinions of teachers with regard to the honesty of their pupils. It was not so easy, however, to find teachers whose opinions were either consistent from week to week or in agreement with the opinions of other teachers. In other words the reliability and validity of our proposed criterion were not such as to justify our placing much confidence in it.* From the results of three tests we could predict more accurately than most of the eighteen teachers concerned whether their pupils would cheat or not in the next test.

One of the most common difficulties encountered in rating pupils for honesty was general unwillingness to "mark a pupil down." On an eleven-point scale, for example, 32% of the cases were rated above five on the scale in intelligence, and 32% in word knowledge; but 73% were rated above five in general honesty, and 72% above five in tendency to cheat on examinations.†

---

* Average reliability of eighteen teachers' ratings, .50. Average correlation between independent ratings of twenty teachers on 600 pupils, .54. For full details see Book Two.

† Someone has suggested that this inhibition against placing a pupil low on a character scale would be automatically overcome if a scale ranging from 90

Allowing for these limitations, we find that our tests agree almost as well with teachers' ratings of honesty as the results of tests of intelligence do with their ratings for intelligence as measured by the CAVI tests.*

B. Validation by Records

In one of the private schools tested provision is made for recording from time to time whether a child is above or below average with respect to various forms of desirable conduct. Among the list of acts is the practice of honesty. In a population of 146 only seven received a notation of below average in this particular during several school terms. Of these seven there were three who cheated on the IER tests and four who did not. Of the 139 who were marked above average or else not marked at all 18% cheated.

C. Validation by Confession

As reported in Chapters III and IV, we took occasion to ask the first population tested whether or not they used the answer sheets wrongly or got help at home and whether they regarded this as cheating. We have usable returns on 2141 cases. The following facts are of interest regarding the question as to whether the children thought that copying answers from the keys was " really cheating."

Over 91% answered this question. Of those who answered it, 88% did so in the affirmative, that is, 88% said they thought that to copy answers from keys was cheating.

If we take only such cases as in all probability actually did use the keys, the proportions are a little different. 44% of the 2141 pupils apparently did copy from the keys. 89% of these answered the question about using answer sheets and of these 82% said they thought that to copy from the keys was cheating.

Of course, many of the 56% not caught at cheating probably did

---

to 100 instead of from 0 to 10 were used, as 90 seems good enough for anyone and so even the worst child may be placed properly lower than the average without any embarrassment to the teacher.

* See Book Two, Chapter VII.

use the keys somewhat, but 93% of them answered the question about it and of these more honest children 93% said they thought that to copy from the keys would be cheating.

We do not know, of course, whether those who cheated are giving us a straight answer as to their real opinion. Probably many of them are anxious to appear honest. Only a few of them, at all events, admitted using the keys. Let us assume that a true picture of pupil opinion is about what is presented by the whole population, including cheaters and non-cheaters. If this assumption is correct, then in about 90% of the subjects measured, the scores represent not only the fact of deception or falsification but also the attitude of deception or the feeling that the act is a genuine case of cheating.

A personal interview with each pupil would have been desirable and will later be included in some of our studies; but lacking this mode of discovering the real attitudes of those tested, these results constitute as complete a validation of the technique as is likely to be secured.

THEORETICAL VALIDITY

So far we have been discussing what might be called the empirical validity of the tests as measures of deception. Following the general practice in psychological testing we have depended on an independent measure of the function represented in the test. In doing so we have been tacitly assuming that the tests used to measure the conduct we are studying were indirect, abstract, laboratory methods of gaining evidence. In Chapter I of Book Two this extreme type of test is contrasted with others in which the situation and response both more nearly approximate real life situations. Free and spontaneous responses to uncontrolled life situations as they occur would not be a test but would constitute natural conduct in the raw state — the ultimate fact of which the more selected and controlled behavior of the test is supposed to give us a short-cut knowledge without the more tedious procedure of observation. To revert to our analogy of the tank and the meter, we can observe the daily use of the water, count the pitcherfuls and bucketfuls that are removed from the tank, and so ultimately find out how much water is consumed. Or we can substitute the meter, which provides an element of control. But here again it would be tedious to wait for the water to be exhausted from the tank or for the meter to run for a month to know how much is consumed; and so we might limit the time during which we shall let the meter run, or even take a bucket and let it be filled through the meter and so shift to a more experimental type of situation. If all the buckets used in practice are of one size and if we know the rate at which buckets are drawn, we can tell from one bucket how much water is consumed, for we have in the test a *measured sample* of the daily behavior.

Now the tests we have been discussing differ from many sorts of test by being of the performance type. When a child deceives in a test he does so in a natural though controlled situation, making a natural though directed response. Consequently there is literally the conduct itself, observed under carefully controlled conditions. It is a measured *sample* of behaviors of similar type.

At this point we stumble against the problem of what we are really trying to measure after all. If the true object to be attained by the test is knowledge of a unified trait manifesting itself in the test response, then we are still in the abstract laboratory situation in our conduct samplings in relation to this supposed concrete reality, the trait. We are reduced in this case to finding our criterion in ratings or some procedure which, as we have seen, is independent of the test. But if the concrete reality is not a generic trait but an accumulation of loosely connected habits, our criterion becomes, in the nature of the case, a series of records of responses in an adequate sampling of all situations which are alike in their capacity to elicit the response under consideration.

This brief statement of this alternative way of conceiving the reality that is being measured will have to suffice until we reach Chapter XXII, which will present in some detail our reasons for favoring the view that we are dealing fundamentally with specific learned habits and not with generic traits.

The adequacy of the selection of situations in a criterion is a matter of convenience. The customary standard of adequacy is the competence of the sample to represent the entire range of situations which elicit the response in question in human life. As no complete measures of any behavior are in existence, reliance is usually placed on common sense to determine the adequacy of the criterion, but the claim of specificity to which we have just referred requires that the standard of common sense be applied to the capacity of the criterion to represent n (an indefinite number of) *behaviors* rather than to its capacity to represent some hypothetical unified trait. As we approach complete specificity of behavior, n approaches infinity. A perfect measure would be the record of an infinite number of instances. This is of course a theoretical measure. We shall call it the " hypothetical criterion."

Applying the Hypothetical Criterion

In performance tests, the score is a record of a specific mode of response in a specific situation. That is, the test is a single sample or small collection of samples of the behavior in question. As such a sample it does not *ipso facto* measure anything else whatever. But if it can be shown to be reliable, then it is *ipso facto* a valid measure of the particular behavior in question in the particular types of situation embodied in the test.* Whenever, for example, it is established that a pupil copied from the answer sheet and thus actually claimed a higher score for himself than he was capable of making, this fact score is a *record* and is inherently valid as far as this situation goes. If he does the same thing again in the same way when he is tested on another occasion, the test procedure acquires reliability and becomes valid for like situations as they may occur. Behavior on a test of this sort is a reliable basis for predicting similar behavior.

By accumulating the results of a series of individually reliable performance tests, then, we can *build up* a true empirical criterion. The number of such samples needed to make this empirical criterion adequate would be simply the number that would give results practically identical with the hypothetical criterion or an infinite number of similar records. This number can be statistically determined.*

---

* Its validity is the square root of its reliability. See Book Two for the statistical background of this whole discussion.

Let us apply this principle to our own material. Our tests provide records of dishonest or honest behavior in a certain number of very specific situations. Suppose a child has taken twenty of these tests. We now know what he did in twenty situations. What does this knowledge tell us about what he will do in the next twenty situations, or the next ten, or the next forty, or any number? Now we have already seen in the section on reliability that if a child copies from answer sheets on one occasion he is quite likely to repeat the performance on a second occasion. This is what we mean by the reliability of the test and the constancy of the behavior. Provided the situation remains the same, the test is valid.

But what does copying from a key tell us about the likelihood of his stealing money from his mother's purse, or lying about his age, or similar behaviors?

A test may be highly valid as a measure of the specific situations with which it deals and yet have low validity as a measure of dishonesty in general or rather of dishonesty in a wide variety of situations. Thus the validity of a test must be determined always from the point of view of what the test *claims* to measure. If the IER tests claim to measure only the copying-from-a-key type of deception, they have a satisfactory validity,† but as measures of deception of various sorts their validity is much lower.

By way of analogy suppose we had as a problem that of determining the customary behavior of an individual in a ten-room house. The observer is limited to 100 minutes of observation. Now the observer may put his subject in one room and observe him there for 100 minutes. This would undoubtedly give a better notion of his customary behavior in that room than would ten minutes' observation; but it would give a very inadequate idea of his behavior in the other rooms. Suppose, then, the observer puts his subject in each of the ten rooms, ten minutes to the room. Now his observations will more adequately represent the total house-behavior, but less adequately any given room-behavior. Ideally he should leave him in each room long enough to get a good picture of his behavior in that room; then the total would be valid for the whole house. Now if the rooms represent the various situations or types of deception and the tests represent samples of each type, what we have done is to sample the behavior in a few rooms of a rather large house. For the room representing "copying-from-a-key-in-a-classroom" we have taken three samples (Arithmetic, Completion, Information). These three samples are reasonably adequate for this room. They tell us about what would happen if we had an infinite number of similar tests. In the "adding-on-more-scores-after-time-is-called" room we have taken six samples (six tests), which is also reasonably adequate, having high validity* as a measure of this type of deception. The question now is, How adequately have we sampled the whole house? †

---

* See Book Two.

† About .90.

Readers are referred to Book Two for the technical discussion of this complex problem. Following our illustration of the house, we find that while we have measured a few rooms fairly well with our seven different test situations involving some twenty-five different tests, in order to get a fair picture of the whole house or of the whole range of deceptive possibility, we should need thirty-one different test situations instead of seven, including a total of possibly a hundred different tests. What then is the practical value of the tests we already have?

PRACTICAL VALUE OF THE DECEPTION TESTS

A. The Tests as Instruments for Diagnosis

That the tests reveal a state of affairs of some consequence to moral education there can be no question. The situations used in the tests, however, are not varied enough nor numerous enough to give a complete picture of all deceptive tendencies that may exist. The picture that is given, however, is important whether one is thinking of individual tendencies or the characteristic attitudes of groups or classrooms. In either case the fact of deception is both an instance of unfortunate maladjustment and a symptom of underlying conditions needing attention and remedy.

---

* About .93.

† There is no reason to suppose that any small sample of situations will ever adequately represent the entire range of situations of which it is a part, that is, that it will have a high validity. If it should be found to have a high "validity," this, indeed, would be evidence of the existence of a general trait. In distinction from the trait theory, the claim of specificity makes the selection of situations for a valid test primarily a problem of probability.

B. The Tests as Instruments of Social Study

The maladjustment of deception and its fundamental causes may well be studied by our techniques as they stand. We shall illustrate in Part II how statistical methods may be employed to reveal facts associated with dishonesty, such as age, intelligence, sex, race, family, economic background, and school placement.

As tendencies to deceive vary enormously from school to school, we may also use the tests described to discover factors in school method which promote honest relations between teacher and pupils and among pupils. Part III will give sample studies of this sort.

Furthermore, sundry devices for teaching honesty are being used to-day with vast numbers of children. Our techniques enable us to evaluate such devices in terms of their actual effects on the children. Certain of these procedures have been studied and are reported in Part III.

C. The Tests as Instruments of Prediction

Within the situations utilized in our tests, we may safely predict the behavior of a group. We can tell in advance approximately what proportion of the pupils will cheat, and what the average amount of cheating will be. If it were necessary to predict what an individual pupil would do, we should require six instead of three IER tests of classroom deception, where an answer sheet is used, and twelve instead of six Speed tests, where deception consists in adding on answers while scoring one's paper. Similarly, for each of the other types of deception, the number of sample situations would need to be greatly increased.

Even doubling the number of tests would not be adequate if we wanted to be able to predict conduct on a broader scale. To tell whether a child would be honest in *just any* situation would take a vast amount of work. A slight extension of the kind of situations used in our tests, however, would greatly augment their predictive value. In particular, more samples are needed of playground situations and occasions involving the use of money and property.

We can be fairly certain, however, that within the limits of the type of situation and behavior represented in our techniques anyone having taken twenty tests is practically measured. That is, if a pupil cheats ten times in twenty tests, the chances are that he will cheat approximately once in every two chances in all similar situations until something happens to change his conduct.

D. The Tests as Measures of Character

In the Introduction we warned the reader against assuming that when we have tested conduct even in a large number of situations we have thereby tested character. We have not. Our tests of deception are not, as they stand, tests of character. All we have is a series of records of specific acts. Even when these records are highly prophetic of future acts of the same sort they are not to be taken as quantitative descriptions of character. We shall leave to a later volume the discussion of what is involved in testing character as a whole.

SUMMARY

We have rehearsed the less obvious values and disadvantages of the various techniques used. A few of the facts are brought together in Table VI, which may be used as a convenient reference for keeping in mind the characteristic features of all the tests.

TABLE VI

CHARACTERISTIC FEATURES OF CEI TECHNIQUES FOR MEASURING DECEIT

TEST	TYPE	MODE OF DECEIT	ADMINISTRATION		SCORING
			Time per group	Difficulty	Time per child †
IER	Double testing	Copying	4–5 hr.	Easy	20 min.
Speed	Double testing	Adding on	40 min.	Hard	15 min.
Coördination	Improbable achievement	Peeping	35 min.	Easy	8 min.
Puzzles	Improbable achievement	Faking Stealing	40 min.	Hard	2 min.
Parties	Improbable achievement	Faking Stealing Peeping	45 min.	Hard	2 min.
Contests	Improbable achievement	Faking	20 min.*	Hard	3 min.
SA lying	Improbable achievement	Misrepresenting	15 min.	Easy	2 min.

* Per individual.

† Including checking.

PART II

FACTORS ASSOCIATED WITH DECEIT

CHAPTER VI

METHODS EMPLOYED IN STUDYING THE CAUSES AND SIGNIFICANCE OF DECEIT

Specializing as we did on tests and measurements, we have been dependent on statistical methods of handling our data, both in the building of tests and in the interpretation of results. We have been able so far to outline our general approach to the problems of measurement without introducing much technical material. But before attempting to report our findings as to the causes, significance, and control of deceit, it will be necessary to explain certain elementary statistical devices on the use of which our knowledge of the facts depends. Elaborate details would not be appropriate here, but in Book Two we discuss extensively the more difficult mathematical problems associated with the adaptation of statistical procedures to our study.

The statistical devices employed in this book are those commonly used in describing and comparing quantitative data and in finding relations between them. If we attempted to keep in mind each separate fact about each child, such as his score on each of fifteen deception tests, his intelligence rating, his age, and a dozen other important things about him, we should be hopelessly confused by the mass of detail. It is necessary to summarize our data. But to summarize facts, they must be expressed quantitatively rather than qualitatively.

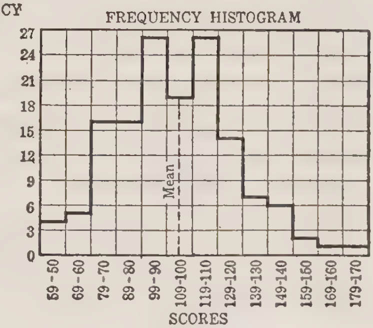
Here is a classroom of forty children. Each child is different from every other in appearance, ability, talents, and character. A complete picture of all the facts is to be found only by sitting in the classroom and studying each child. John has red hair, white, regular teeth, and small feet; he answered all his arithmetic problems and failed in geography; he smiles a great deal; his blue eyes twinkle at every funny remark; and so on. We could fill volumes with such descriptions before child number forty was reached at all, and no one could profit much by the record. It can readily be seen, therefore, that if any use is to be made of these facts, some sort of classification is essential. We have already begun to classify when we have used words about John. For instance, we classed his hair as red and his teeth as white. But these facts are worth more if we can say also that only John has red hair and he is one of four children whose teeth are regular. But if we are to grasp the whole classroom, our picture is still too detailed. We shall have to let John be swallowed up in a statement about all the children or we shall never be able to comprehend the class as a whole. So we count the number having hair of each color and find that there are one red head, fourteen brown heads, six black, etc.; that two children did all their arithmetic problems, five did all but two, ten did six problems, etc. That is, we have begun to summarize. We can summarize the facts about the arithmetic problems more readily than the facts about the hair color simply because in the one case we are thinking about the amount or quantity of something having only one quality (arithmetic), whereas in the other case we have several different qualities to deal with. If all the hair had been brown, we could have summarized the facts by stating how much brownness each child's hair showed, placing it on a scale ranging from just no brownness at all, through one degree brown, two degrees brown, and so on.

This illustration gives an idea, in simple form, of how, in summarizing facts, we have to free ourselves from bondage to the concrete thing and begin to be abstract or to use ideas about the thing or about a number of things at once. The way of making these summaries and of stating how one set of facts is related to another set of facts is called statistics. It enables one to grasp many facts at once and thus to comprehend relations that would otherwise be obscure. It does not do violence to the facts nor change them in any way.

Usually the first thing to do with a set of facts is to " distribute " them, or make a frequency distribution such as the one described on page 70. This, it will be recalled, is simply a table or a chart showing how individuals differ in a given respect. The following is a table of intelligence test scores of the eleven-year-old boys of population C.

FREQUENCY TABLE

170-179	1
160-169	1
150-159	2
140-149	6
130-139	7
120-129	14
110-119	26
100-109	19
90- 99	26
80- 89	16
70- 79	16
60- 69	5
50- 59	4
N = 143	



Here the scores are grouped in tens or in " class intervals " of ten. Any convenient grouping might be used. The table reads, " 2 pupils scored between 150–159, 6 between 140–149," etc. This table and its accompanying graphic diagram, or histogram, present the facts in the most useful way for statistical purposes. But it is not always convenient to present data in such detail, and further it is difficult to describe in words these total distributions.

Certain outstanding features of a distribution may be shown without presenting all the data. The features usually given are:

1. The range, or the highest and lowest scores
2. The median, or the point on the scale of scores on each side of which just 50% of the cases fall
3. The 25 percentile and 75 percentile, or the score reached by 75% of the group and by 25% of them. Any other percentile may be similarly used.

4. The average (arithmetical mean), or the sum of all the scores divided by the number of pupils
5. The semi-interquartile range, which is the distance between the 25 percentile and the 75 percentile. This simply states the range of the scale covered by the middle 50% of the group. It is called Q and also the probable error (PE).
6. The standard deviation (sigma). Another measure of spread or dispersion, which defines the limits of the scale covered by about the middle $\frac{2}{3}$ of the cases

Now instead of presenting the entire distribution of a set of facts we can give a verbal description by using the terms just defined. To refer to our illustration, we can say that we tested 143 eleven-year-old boys with the IER intelligence tests and found that the scores range* from 53 to 176, that the median or 50 percentile score is 102.4, that the 25 percentile is 86.7, the 75 percentile is 118.2, that the average or mean score is 103.3, that the Q (or semi-interquartile range) is 15.75, that the SD (standard deviation, or sigma) is 23.4. We might go on and state many other so-called statistical constants, thus describing the distribution in greater detail. Such a verbal description has advantages other than those of mere statistical shorthand, for by the use of these terms comparisons may be made and relationships, associations, and concomitants found.

HOW COMPARISONS BETWEEN DISTRIBUTIONS ARE MADE

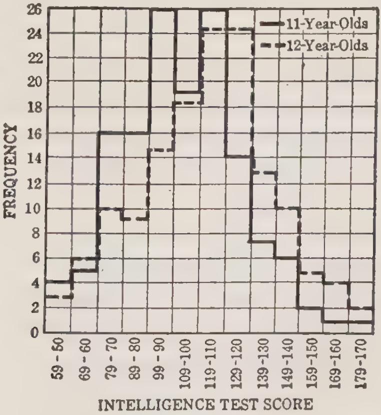
The only complete way to make a comparison between two or more groups is to give all distributions in one table, or to plot all the data in histograms or curves on the same base lines. For example, let us compare the intelligence test scores of the eleven-year-olds with the twelve-year-olds of population C. The frequency distributions are as follows:

---

* Found by referring to the original scores.

Scores	Frequencies	
	11-Year-Olds	12-Year-Olds
170–179	1	2
160–169	1	4
150–159	2	5
140–149	6	10
130–139	7	13
120–129	14	24
110–119	26	24
100–109	19	18
90–99	26	15
80–89	16	9
70–79	16	10
60–69	5	6
50–59	4	3
	143	143

It happens here that we have the same number of cases in each distribution, so that we can plot them without computing the per cent each frequency is of its total. The two curves are as follows:



It will be seen at a glance that the dotted line tends to bear to the right of the solid line (or up scale), indicating that the twelve-year-olds tend to score higher. Using statistical language, the difference between these two groups may be described as follows:

Comparison in Respect to Intelligence Test Scores	11-Year-Olds	12-Year-Olds
Range *	53–176	52–179
Median	102.4	114.4
25 percentile	86.7	95.2
75 percentile	118.2	129.3
Mean	103.3	112.8
SD	23.4	26.4
Q	15.75	17.05

* Found from the original scores.

Another useful way of describing the difference between two groups is to state the percentage of the one group that reaches or exceeds the median or mean of the other group. In this case the median of the twelve-year-olds is 114.4 points. Only 32% of the eleven-year-olds succeeded in getting a score as high as or higher than this.

HOW INDIVIDUAL COMPARISONS ARE MADE

In the foregoing discussion we assumed for the sake of simplicity that the two groups had the same test. Suppose now that the same group has two *different* tests. How may the scores of the members of the group be compared? Clearly they must first be expressed in comparable terms. To be in comparable terms they must have the same point of reference and be in the same units. Suppose John Doe scores 160 on an intelligence test and 60 on an arithmetic test. Which represents the greater achievement? There is no way to find out except to compare these scores with those made by other pupils of his age, grade, and general status in both tests. Suppose John is twelve years old and in the seventh grade, and that the mean scores of a large group of twelve-year-old seventh-grade pupils for the two tests are respectively 150 and 50. In both tests John is ten points above the mean. But a point in one test does not equal a point in the other. Comparable points are needed. The usual way around this difficulty is to take some measure of the spread of each distribution as the unit. The most common unit, as was pointed out on page 73, is the SD (standard deviation). The facts we need to know, then, to compare John's score on one test with his score on the other are the mean and standard deviation of the twelve-year-old seventh-grade scores on each test, which may be assumed to be as follows:

INTELLIGENCE TEST

Test 1	
Mean	SD
150	25

ARITHMETIC TEST

Test 2	
Mean	SD
50	5

In the intelligence test the point of reference is 150 and the unit is 25; in the arithmetic test the point of reference is 50 and the unit is 5. The rest is simple. John's two comparable scores are now, for the intelligence test, $\frac{160 - 150}{25} = \frac{10}{25} = +.4$, and for the arithmetic test, $\frac{60 - 50}{5} = \frac{10}{5} = +2.0$. Thus John really scored very much higher in arithmetic than in intelligence, even though his gross score on the intelligence test was 160 and on the arithmetic test, 60, and even though he deviated 10 points above the group mean on both.

This is one of the most important determinations in all statistics. It is fundamental to all mental and social measurements. It constitutes the basis of measurement not only of the facts themselves but also of their relations. But before discussing how to state relations between facts let us consider briefly the question of the influence of chance errors on group means.

In comparing one group with another or what a group does one day with what it does at another time, one often wishes to know how great the difference between the two means or medians should be in order to have real significance. Obviously slight differences may occur by chance. The problem is to determine whether a given difference might be a chance difference. There is a way of figuring the unreliability of a difference between two means, of determining, that is, how great any difference should be to have more than a chance significance; but the mathematics of this procedure is too complex for treatment here. It is enough to say that this unreliability of the difference between two means depends on the unreliability of the two means themselves. In measuring anything, one cannot safely generalize from what is found to be true of one small group to what may be true of other groups or of the population as a whole. A mean or average has only limited significance. Statistically, this limitation is expressed in terms of the range within which a large number of similar means would fall if other similar groups were measured, or if the same group were measured several times. This range is, as usual, expressed in terms of the SD of a distribution — in this case a distribution of a series of such means. The amount of fluctuation in a series of such means depends on the number of cases included in each group measured and on the spread of the scores up and down the scale. Obviously, the more cases there are in any single group, the more likely will the mean of the group represent the mean of all possible cases. On the other hand, the wider the spread or range of scores, the less representative the mean is of them. On page 157, for example, are two sets of scores having almost the same means. One distribution is scattered and the other is condensed.

The range or amount of spread is indicated by the size of the standard deviation (SD), which in the case of A is 2.14 and of B is 3.14. A's mean is a much more stable and secure measure than B's mean.

When the SD and the number of cases are known, the unreliability of a mean can be determined and is stated in terms of the range within which a series of similarly determined means would fall by chance, or, in other words, in terms of the SD of a distribution of the means of a large number of similar groups. The more reliable each of two means is, the more reliable will be the difference between them.

SCORES	*A*	*B*
140–149		5
130–139		5
120–129		10
110–119	2	10
100–109	10	15
90–99	25	15
80–89	45	20
70–79	45	25
60–69	20	15
50–59	10	15
40–49	5	10
30–39	3	10
20–29		5
10–19		5
	165	165
	M = 79.8 SD = 2.14	M = 80 SD = 3.14

The formula for expressing the unreliability or standard deviation or standard error of a mean is $\frac{\mathrm{SD}}{\sqrt{\mathrm{N}}}$ when SD is the standard deviation of the distribution in question and N is the number of cases. The unreliability of the difference between two means, called the SD of the difference or the standard error (SE) of the difference, is expressed as $\sqrt{\frac{\mathrm{SD}_1^2}{\mathrm{N}_1}+\frac{\mathrm{SD}_2^2}{\mathrm{N}_2}}$ or $\sqrt{\mathrm{SE}_1^2+\mathrm{SE}_2^2}$ where SD_1 and N_1 refer to one distribution and SD_2 and N_2 to the other.* This figure shows what the standard deviation of a distribution of differences between the mean of one group and the means of a large number of similar groups would be if these other means were actually found. As was noted in our discussion of the meaning of the standard deviation, 999 cases out of 1000 fall within the limits of plus and minus 3 SD. Consequently if the difference between two means is three times its standard error, it is regarded as statistically significant or beyond the limits of mere chance difference.

---

* The statistician will recognize the absence from this formula of the term $(-2r_{\mathrm{M_1M_2}} \cdot \mathrm{SD_1SD_2})$, which has been omitted to simplify the statement, and which usually equals zero under the assumptions of our study.

It should be borne in mind that the obtained mean measure or the difference between means, even though very unreliable, is more likely to be the truth than any other one measure or difference; and also that the truth is just as likely to vary from the obtained mean measure in one direction as in the other. Results with small reliabilities may thus be results of very great value.

THE MEASUREMENT OF RELATIONSHIP

Science seeks facts and relations among them with a view to determining causes and predicting effects. The facts we are dealing with are such things as test scores, ages, school status, and social and economic status. These facts are usually expressed quantitatively and recorded in frequency distributions. Relations, associations, concomitants, and the like between facts may be described in various ways. The manner and the language of the descriptions are usually suited to the nature of the facts and to the purpose or aim in view.

The most commonly used statistical device for stating relationship between two sets of facts is known as the coefficient of correlation, or r. The facts to be compared or related are called variables. The two facts about each individual may be such things as two arithmetic scores, or size of hands and size of feet, or a deception score and age, or the sum of several deception scores and the length of time in a particular school. Perfect resemblance or complete association between two series of facts or variables is expressed as $+1.00$, complete absence of association by 0, and completely inverse association by -1.00. Thus the correlation between any two variables may result in such figures as $+.90$ or $-.60$ or $-.07$ or $+.01$ or anything from -1.00 to $+1.00$. The important thing is to become so familiar with the concept that a correlation of +.90 or +.40 or +.10 or −.30 or what not will have a fairly definite meaning. A correlation of +1.00 means that the very highest scores in one variable are associated with the very highest in the other variable, that the second highest scores in one are associated with the second highest in the other, and so on down to the lowest. For example, the correlation between the height of a column of water in a pipe and the pressure it exerts at the bottom is +1.00 or at least +.999. On the other hand, the correlation between the distance above the sea level and barometric pressure is −1.00 because the greater the altitude, the less the pressure. But the correlation of daily records of barometric pressure and temperature at a given spot is close to zero.

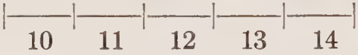
When applied to mental and social measurements, the concept of correlation is closely allied with that of comparable scores. It will be recalled that the scores in two tests are made comparable by taking each as a deviation from its mean and dividing it by the SD of the distribution. This is called an SD deviation. The correlation between two tests is +1.00 when these SD deviations of the individual scores on the two tests exactly match. This *r* of +1.00 may be illustrated as follows:

Test 1			Test 2	
Pupils	Score	SD Deviate	Score	SD Deviate
A	10	− 1.50	118	− 1.50
B	11	− .75	121	− .75
C	11	− .75	121	− .75
D	12	0	124	0
E	12	0	124	0
F	12	0	124	0
G	13	+ .75	127	+ .75
H	13	+ .75	127	+ .75
I	14	+ 1.50	130	+ 1.50

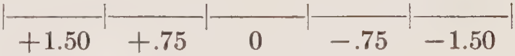
If they exactly match but are reversed, so that plus deviates on one variable are associated with minus deviates on the other variable, the correlation is −1.00. Any kind of divergence from this perfect matching of comparable scores will tend to reduce the correlation. When they are paired in a mere chance order the correlation is zero or nearly zero.

A helpful way of picturing relations between two sets of facts is to plot them on what is sometimes called a scattergram. One set of scores or facts is laid off on a scale along a line. Small sections of the line represent a single score or group of scores. Let us plot our two sets of scores to illustrate the meaning of a scattergram.

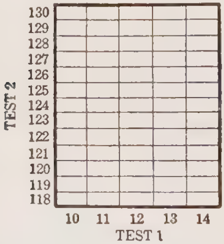
The scores on the first test run from 10 to 14, or, as SD deviates, from +1.50 to −1.50, so we make a scale like this:



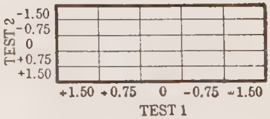
or like this:



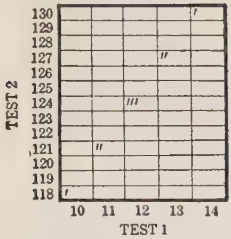
The other set of scores runs from 118 to 130, or, as SD deviates, from + 1.50 to − 1.50. This time the scale is placed at right angles to the first like this:



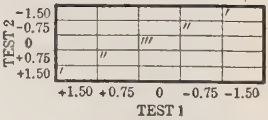
or this:



If we draw lines in each direction so as to block off the sections of the scale, the result gives us a surface of rectangles called cells, each of which is above one section of the bottom scale and opposite one section of the vertical scale. Now we can say two things at once about each pupil by finding the cell that is above his first score and at the right of his second score, and putting a mark in this cell to stand for both scores. The next diagrams show the scores of our two tests for pupils A, B, C, etc., thus entered:

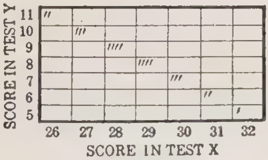


or thus:



The marks are seen to fall symmetrically on a diagonal. This, therefore, is what a correlation of +1.00 looks like.

The scattergram will illustrate how the coefficient of correlation may be thought of in terms of the prediction of one variable from the other. Although the coefficient never shows which variable is causing the other or whether both are dependent on a third factor, it does tell to what extent one set of facts can be predicted from the other set. If the two tests correlate +1.00, as in the illustration just given, the score on either test can be predicted from the score on the other, for all the entries opposite any section of either scale are opposite just one section of the other scale. All who scored 12 on test 1 scored 124 on test 2, etc. Prediction is just as certain in the following scattergram when the correlation is −1.00.



Figures 11, 12, and 13 are correlation scattergrams illustrating correlations of .93, .49, and .21. Figure 11 shows that all those who scored at a certain point on test Y scored around the same point on test X. For example, those who scored either 18 or 19 on Y scored between 18 and 23 on test X. Their mean X score is the mean of that row or slice of the table. It is clear that the more scattered the dots are across and up and down, the less reliable is the prediction. In Figure 13, where the coefficient (r) is .21, one can predict one set of scores from the other almost as well by guessing as by consulting the scattergram.

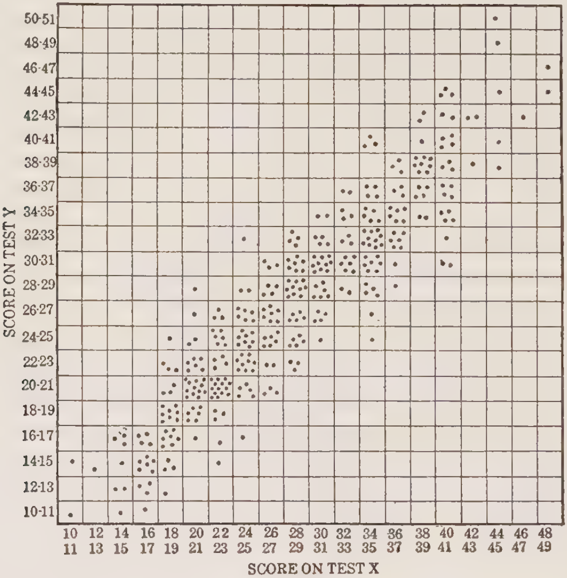


FIGURE 11

Illustrating a Correlation of +.93

Scattergram of the two forms of the Arithmetic test used for the IER deception testing. Here the two forms were given with no chance to deceive. The scattergram therefore shows the equivalence of the two tests and the amount of *honest* variability to be expected when these same tests are used to measure deception by having an answer sheet available on one of the two days but not on the other. The likeness between the two tests is called their reliability. In this case the coefficient of correlation, or r, is .925. Each dot stands for the two scores of a single pupil. The scores are grouped in twos.

Although small correlations have low predictive value, they may express genuine relationship. There is a real relation between test 1 and test 2 in Figure 13. If the number of cases is large enough to make the coefficient genuinely reliable, it represents what organic relation there is between the tests. The only difficulty with small *r*'s is that when the number of cases is small (less than 100) they may be merely chance happenings. The unreliability or "probable error" (PE) of a coefficient of correlation is given by the formula $.6745\left(\frac{1-r^2}{\sqrt{N}}\right)$. The coefficient should be at least four times its probable error, or PE, to have very much importance.*

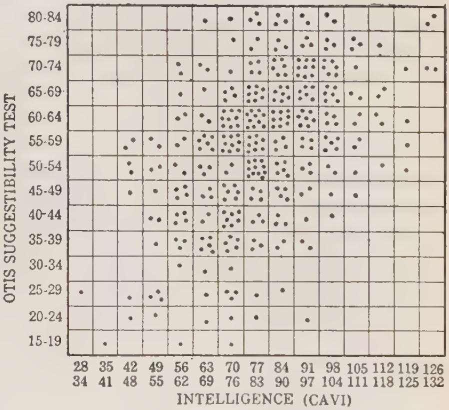


FIGURE 12

ILLUSTRATING A CORRELATION OF + .49

Scattergram showing the relation between scores on the Otis Suggestibility Test and scores on an intelligence test. Here the *r* is .488, showing that intelligence goes with greater resistance to suggestion; but the relationship is not close, since those receiving about the same intelligence rating, *e.g.*, 84–90, vary all the way up and down the suggestibility scale.

PARTIAL CORRELATIONS

As has been noted, the coefficient of correlation between two sets of measures does not indicate which is the causal or independent variable and which is the dependent. Indeed, they may be correlated because they are each associated with some third or fourth variable. For example, there is a correlation between the intelligence of children and the size of shoes they wear; but no one would suppose that the size of foot is caused by the intellect nor intellect by size of foot. They are correlated because each is associated with age. If we consider only children of a given age, or keep age constant, as we say, then the correlation between size of foot and intelligence is zero or nearly zero. Taking another illustration from our own data, we find a certain small but positive correlation between moral knowledge and conduct. Now these two may be associated because each is connected with intelligence. That is, intelligence may be the link that binds them together.

---

* The non-technical reader is referred here to any text on elementary statistics. The probable error of a distribution is a distance which, when laid off in each direction from the mean, includes 50% of the cases. Four times the PE in each direction includes about all the cases. The chances are negligible that an *r* would vary beyond four times its PE if a long series of similar *r*'s were computed on equivalent data.

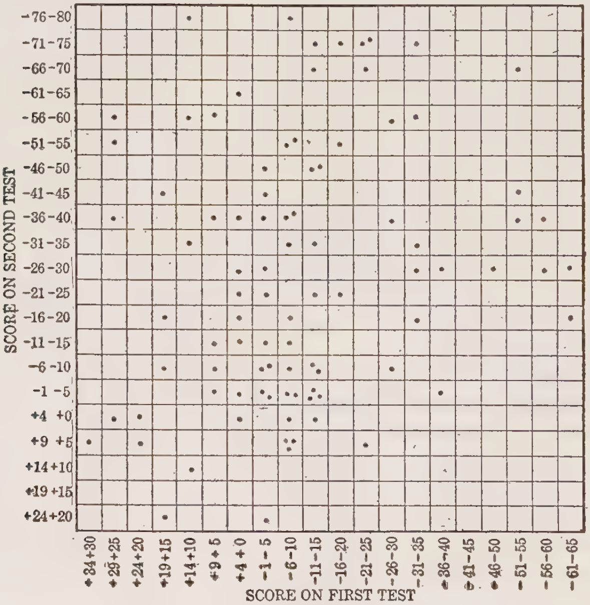


FIGURE 13

Illustrating a Correlation of +.21

Scattergram showing relation between amounts of home cheating on two separate occasions six months apart. Here the r is only + .2126. Evidently one cannot predict from one test only what a pupil will do six months later.

To find out, we keep intelligence constant, or find the correlation between conduct and knowledge for different groups having approximately the same intelligence ratings. There may be several such groups. The average of the resulting correlations is the equivalent of the partial. In actual practice we apply a short cut by finding out the intercorrelation between each of the three variables and substituting these in a formula.

In case we wish to keep constant two variables such as age and intelligence, the procedure is the same. Take groups of the same age and the same intelligence, find the correlation between knowledge and conduct with each subgroup, average these correlations, and the result is the partial. When we talk about " partialing out " a variable, all we mean is that we have held it constant.

CHAPTER VII

AGE, SEX, INTELLIGENCE, AND PHYSICAL AND EMOTIONAL CONDITION

When the facts which combine in an event are few and simple, it is comparatively easy to arrange them in a causal sequence. For example, a boiling radiator and an overheated engine are associated. Here we are dealing with straightforward facts the meaning of which is clear. There is a direct and simple relation between the temperature of the engine and the temperature of the water. Since one is hotter than the other, the heat tends to pass from the hotter to the cooler. But if we say that boys cheat more than girls or girls more than boys, while it is perfectly clear that cheating is not the cause of any fundamental physiological differences, it is by no means clear whether or not the physiological differences to which the word " sex " refers have anything to do with the relative tendency of the two sexes to cheat. Boyhood is not a simple fact in direct relation to other facts. It is a symbol for a highly complex set of facts, some of which, like size, strength, depth of voice, are causally related to primary sex differences, and others of which, like occupations, interests, codes, and clothing, are accidents of circumstance and culture associated now with one sex and again with the other.

The same is true of chronological age. On the one hand it means or symbolizes physiological changes which take place primarily through the operation of biological forces, and on the other it means the accumulation of experiences which vary greatly from family to family, from nation to nation, and from generation to generation.

Consequently it must not be supposed that, when we point out the extent to which deception is associated with sex or age, or with the still more complicated factors of intelligence, race, and home background, we are attributing to any of these congeries of fact some mystic potency to cause an individual to cheat. We shall do what we can to pick out the invariable and necessary antecedents of the tendency to deceive, but these are so intermingled in a matrix of irrelevant data that they cannot for the most part be completely isolated from one another.

Social facts differ from physical facts not only in their complexity but also in another respect, which still further increases the difficulty of isolating and measuring them. If one wishes to know the constituents of a rock, he has no hesitation in crushing it, dissolving it, or subjecting it to any other experimental procedures in the course of which it is disintegrated. When dealing with a human being, however, or with a social group, there is not the same freedom of method. Such analysis of social objects as is made must proceed without disturbing the objects themselves. It is here that the statistical devices described in the last chapter come to our rescue. Our laboratory is our coördination paper and our calculating machine, and for test tubes we substitute tables and graphs, correlation coefficients, means, and medians. Instead of taking one child and dissecting him physically and spiritually, we take a large number of children, find out a large number of facts about each, and then recombine these facts in such a way as to show how they are related to one another in the individual. Let us turn then to the statistical analysis of our data in the hope of reaching a little better understanding of the factors which combine in an act of deception and of their relations to one another.

The facts which will be dealt with in Part II are in most cases a mixture of social and biological ingredients which we make only a slight attempt to disentangle. The complete list is as follows:

Age
Sex
Intelligence
Physical condition
Emotional condition
Occupation
Cultural background
Family
Race and nationality
Religion

School grade
Retardation
Attendance
School achievement
Association of friends
Sociability
Suggestibility
Attendance at motion pictures
Work and play
Deportment
Motives

SEX AND AGE

We shall consider age and sex together. Many tests which measure the individual's response to his physical environment show large age differences and small sex differences, whereas most tests which measure the individual's response to his social environment show large sex differences and small age differences. In the case of deception, however, we find no such consistent differences that can be attributed to either the group of facts called " age " or the group of facts called " sex." In some populations, the older children cheat more and in other populations they cheat less. On some tests the girls are the more dishonest, whereas on others the boys show the greater tendency to deceive.

In view of the fact that different tests were given to different ranges of ages and to different populations, it is not possible to combine all our data in one age-sex comparison, but we shall make such summary graphs and statements as the data will permit. In Figures 14 to 23, the prevalence of deception is expressed by the percentage of those cheating on the different tests and for both sexes. The *r*'s given in the accompanying tables are the correlations between age and the " amount " scores for each type of deception test.

A. Age-Sex Differences in IER School Cheating

1. Sex Differences. Figure 14 shows the situation in schools A, B, and P–Q. Although the girls appear more deceptive in B and P–Q, the reverse is the case in A and for certain age levels in B and P–Q. When all the boys are combined, as in Figure 15,

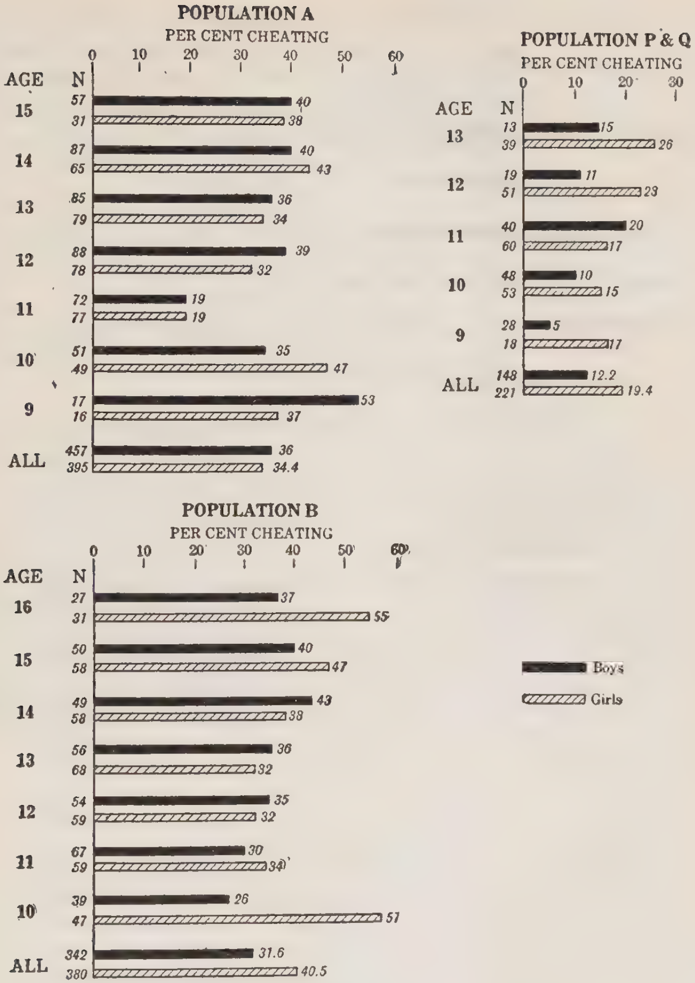


FIGURE 14

Age-Sex Differences on IER School Tests in Terms of Per Cent Cheating at Each Age Level they appear more deceptive than the girls; but this is due to the inclusion of school C, which is all boys and rather more deceptive than the average. Leaving out C, the per cent of cheating among the boys drops to 27.7, which is 6% lower than the girls; and even when the two sexes are exactly matched for ages and schools, the boys still have the advantage by 3%.

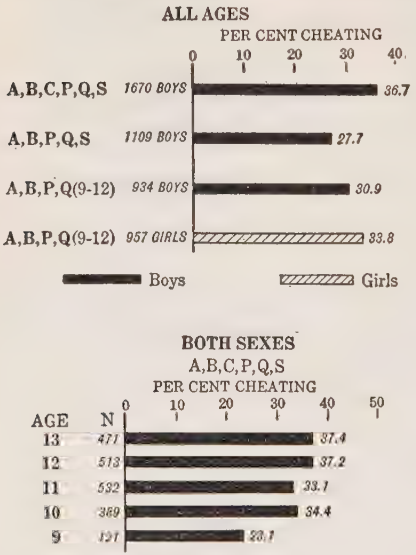


FIGURE 15

Summary of Age-Sex Differences on IER School Tests for Populations A, B, C, P, Q, and S

2. Age Differences. When all populations and both sexes are combined, as in Figure 15, a slight tendency for deception of this type to increase with age is observable. The amount of this tendency is statistically expressed in the correlation coefficients given in Table VII, which, while small, are mostly positive.

TABLE VII

Age-Deception Correlations for IER School Xi Scores

Population	Coefficient (r)
A	− .025
B	+ .079
C	+ .219
P, Q, S	+ .289
A, B, C, P, Q, S	+ .140

B. Age-Sex Differences on the Speed Tests

1. Sex Differences. In the Speed tests the boys cheat slightly more than the girls, as shown in Figure 16, which summarizes the facts available. The same chart, however, indicates that at the lower age levels the girls exceed the boys. The differences in either case are not large enough to be beyond the limits of chance, however, and so we may conclude that there are no general sex differences on these tests.

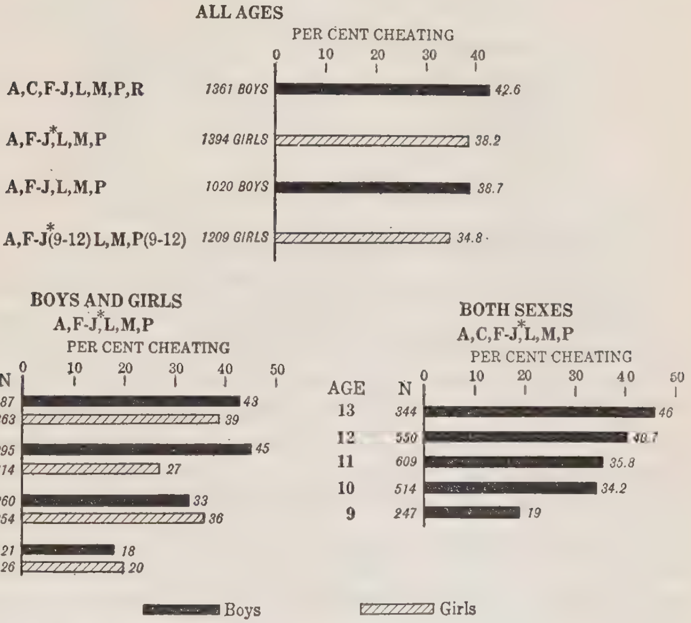


FIGURE 16

Summary of Age-Sex Differences on Speed Tests for Populations A, C, F–J, L, M, P, and R

---

* To equalize the groups, there were taken of the F–J girls ⅔ of the 9-, 10-, and 11-year-olds, ½ the 12-year-olds, and ¼ the 13-, 14-, and 15-year olds.

TABLE VIII

AGE-DECEPTION CORRELATIONS FOR THE SPEED Xi SCORE

POPULATION	COEFFICIENT (r)
A	+ .123
C	+ .217
D	+ .004
J	+ .320
F to J	+ .211
L and M	+ .219
P	+ .246
R	+ .245

2. Age Differences. Except for the ages from ten to eleven there is a rather conspicuous tendency for deception on these tests to increase with age. The correlations of Table VIII are considerably higher than those previously reported. In Chapter VIII of Book Two, however, it is explained that this age difference is due not to a difference in the *tendency* to cheat but rather in the *ability* to cheat by the means provided. The older pupils can work faster on the speed type of test than the younger ones so that, if they do choose to take advantage of the opportunity to add scores when scoring their own papers, they can add on relatively more than the younger ones. When allowance is made for this difference in ability, the *r*'s reported in Table VIII all drop to zero or nearly zero. That is, genuine age differences on the Speed tests are not apparent. The older pupils cheat no more and no less than the younger ones.

C. THE COÖRDINATION, PUZZLE, ATHLETIC, PARTY, AND LYING TESTS

Figure 17 shows no sex or age differences on the Coördination tests. The tendency to open the eyes while doing the test is almost irresistible to both girls and boys. The Puzzle tests (Figure 18), used only in schools D and R, show no distinctive age differences;

but in school D, the girls consistently cheat a little more than the boys at each age level except fourteen. In the Athletic Contests (Figure 19), the girls cheat a little more than the boys, but the age differences are slight and irregular.

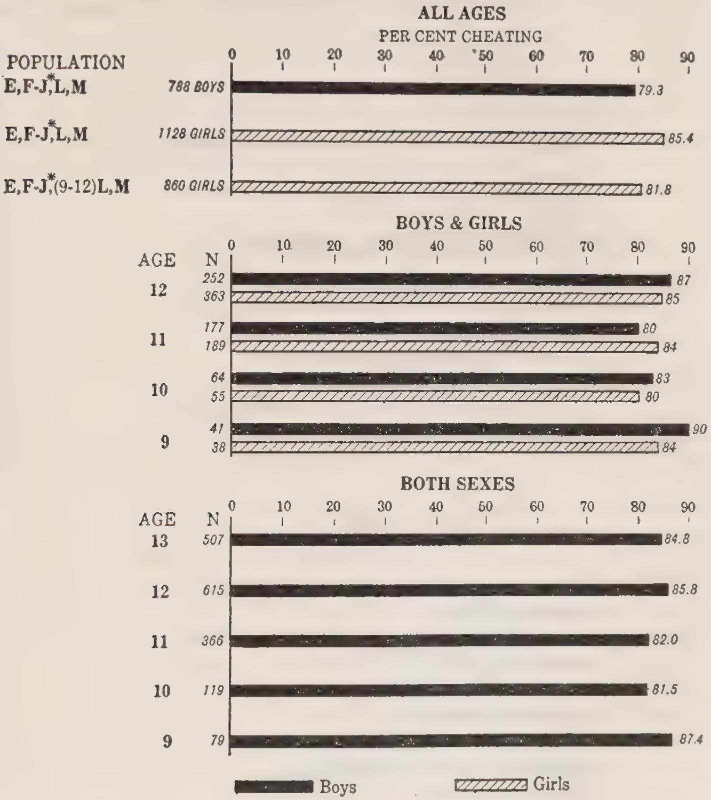


FIGURE 17

Summary of Age-Sex Differences on Coördination Tests for Populations E, F–J, L, and M

* To equalize groups, we have taken of population F–J, girls, $\frac{1}{8}$ of ages 9 and 10, $\frac{1}{5}$ of 11, $\frac{1}{2}$ of 12 and 13, and $\frac{1}{3}$ of 14 and 15; boys, $\frac{1}{5}$ of ages 9 and 10, $\frac{1}{2}$ of 11, and $1\frac{1}{2}$ of 12.

Figure 20 shows a distinct sex difference in population D in the cheating at parties. The other population in which the party tests were given was mostly boys, and no sex comparison is possible. When populations C and D are combined no consistent age differences appear. The biserial coefficient between cheating and age is −.084.

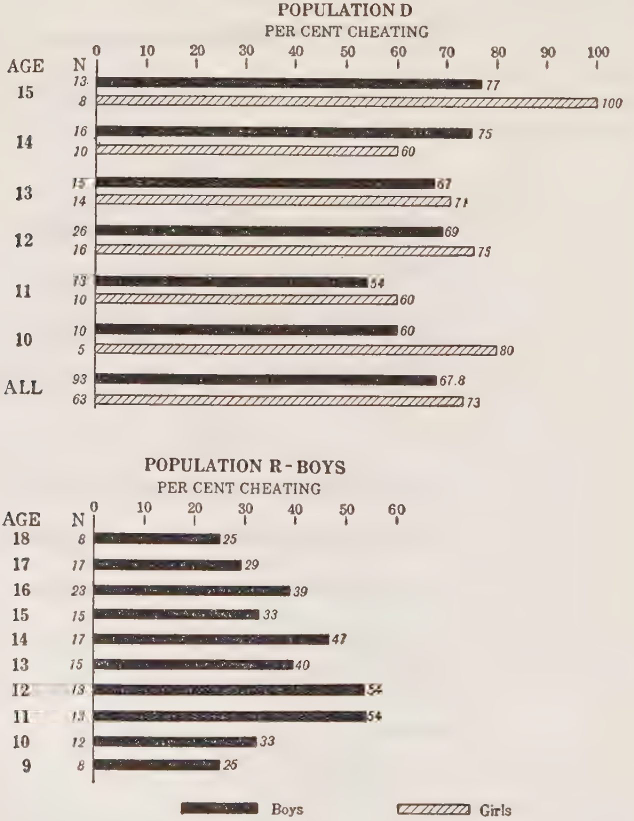


FIGURE 18

Age-Sex Differences on Puzzle Tests for Populations D and R

Age-Deception r, Populations D and R, $+ .147$

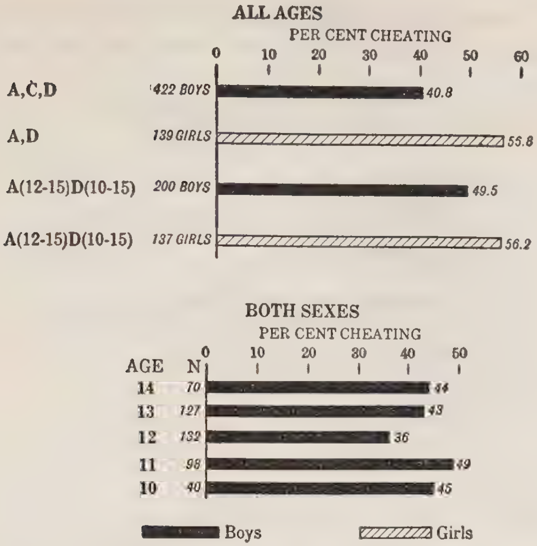


FIGURE 19

Summary of Age-Sex Differences on Athletic Contests for Populations A, C, and D

TABLE IX

Age-Deception Correlations for the Coördination Xi Scores

Population	Coefficient (r)
E	+ .050
F to J	+ .140
L and M	+ .184

TABLE X

Age-Deception Correlations for the Athletic Contest Scores

Population	Coefficient (r)
A	+ .283
C	+ .233
D	+ .218

Figure 21 reveals no age differences in the tendency to lie except at age ten for boys and ages ten and eleven for girls, but the girls as a whole and for each age level are conspicuous for their large scores. It will be recalled, however, that the SA test of lying consists of a series of questions concerning conventionally approved

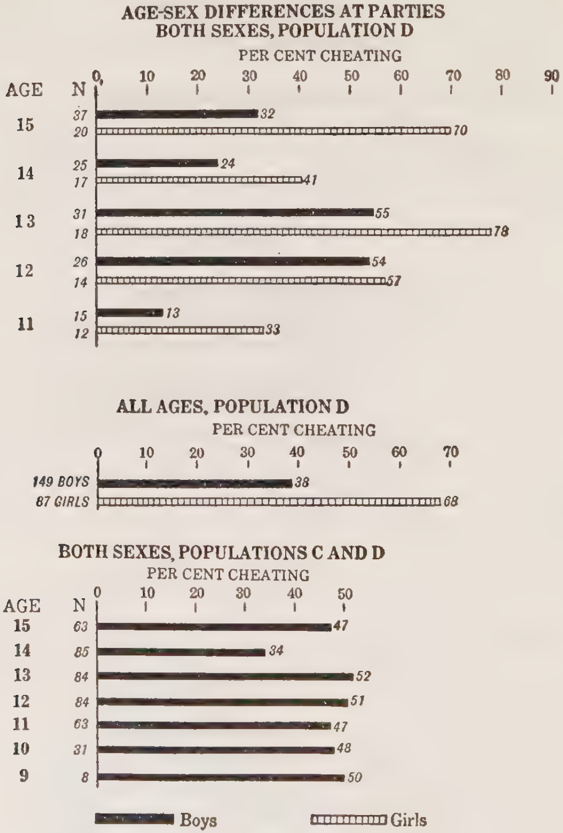


FIGURE 20

Age-Sex Differences at Parties

Age-Deception Biserial r, −.084

acts, such as not talking back, picking up paper, and the like. The standard on which we based our computation of the point at which to draw the line between truth and falsehood on this test was a mixed standard, and it is quite possible that girls can truthfully claim a more complete observance of conventional requirements than boys can. If this should be the case, the differences between boys and girls on this test would be in part, if not wholly, accounted for by a difference in conventionality rather than in deceptiveness. The fair sex may take its choice of the alternatives.

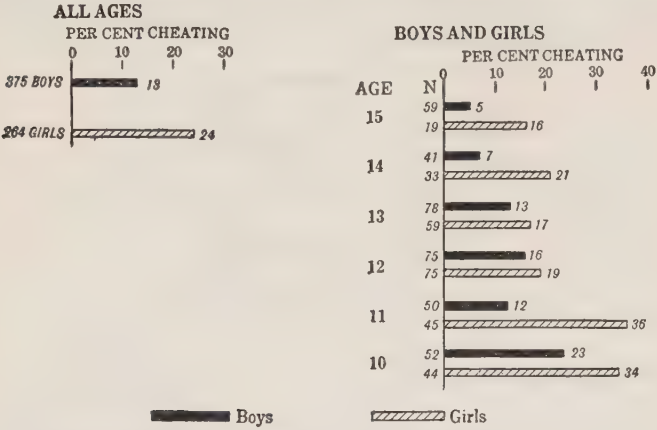


FIGURE 21

Summary of Age-Sex Differences on the SA Lying Test for Populations A and D

Age-Sex r, Population A, $+ .134$; Age-Sex r, Population D, $- .012$

D. Age-Sex Differences in IER Home Cheating

1. Sex Differences. Figure 22 shows the almost uniform tendency for girls to cheat more than boys on the test taken home. Where all ages are combined and the sexes are matched so as to be drawn from the same ages and schools, the difference between boys and girls is found to be five times its unreliability. The interpretation of this difference is very likely to be found not in the greater susceptibility of girls to the temptation to get away with something which will prosper their interests but rather to their greater desire to make good in school. The relative indifference of boys to the formal requirements of the school has often been commented on; and as it takes considerable effort to look up words in a dictionary in order to find their meanings, the lack of motive would be a sufficient explanation of the failure to do even as well on the test taken home as on the one done in school. In schools P and Q, where motive is probably much more evenly distributed between the sexes, it is the boys who take the greater advantage of the situation to deceive rather than the girls.

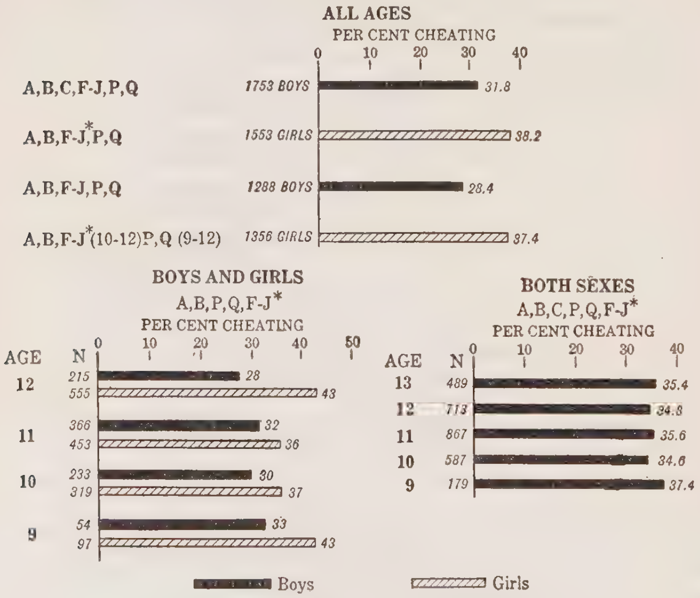


FIGURE 22

Summary of Age-Sex Differences on IER Home Test for Populations A, B, C, F–J, P, and Q

---

* To equalize the groups there were taken of the F–J girls ⅔ of the 9-, 10-, and 11-year-olds, ½ the 12-year-olds, and ¼ the 13-, 14-, and 15-year-olds.

2. Age Differences. In some populations, deception on the home test increases with age and in others it decreases with age. In other words, other influences are determining the change rather than mere chronological age. When all populations and both sexes are combined, as in Figure 22, age differences disappear.

TABLE XI

AGE-DECEPTION CORRELATIONS FOR IER HOME Xi SCORES

POPULATION	COEFFICIENT (*r*)
A	− .222
B	− .144
C	− .042
F to J	+ .088
P, Q, S	− .026

E. AGE-SEX DIFFERENCES ON THE CT RATIO

Figure 23 is a summary of factual scores on a series of classroom tests and represents the percentage of times the subject cheated.

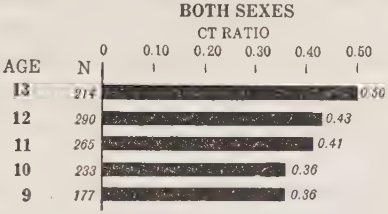


FIGURE 23

AGE DIFFERENCES IN CT RATIOS FOR POPULATIONS C, D, F–J,* L, AND M

The age differences in this CT ratio (per cent of C's to chances to cheat) are apparent only when the populations are lumped together. When treated separately, as in Table XII, the *r*'s are low and average zero.

* One-third of population F–J to equalize groups.

TABLE XII

AGE-DECEPTION CORRELATIONS FOR CT RATIO

POPULATION	COEFFICIENT (r)
C	− .092
D	− .153
F–J	+ .246
L and M	+ .123
Average	+ .031

F. CONCLUSIONS CONCERNING THE RELATION OF AGE AND SEX TO DECEPTION

The age summaries of Figures 14 to 23 and of Tables VII to XII indicate that within the age limits of our data there is only a slight association between age and the tendency to deceive. How or when cheating in school begins we do not know. Recent discussions of the situation in colleges and professional schools do not suggest that as pupils get older there is any strong tendency for the practice to be dropped. On the contrary, since the less intelligent children are gradually eliminated from the school system, the fact that honesty correlates positively with intelligence would lead one to conclude that our low correlations with age really represent a spreading of the tendency to deceive, new cheaters being recruited to take the place of the cheaters who drop out, thus keeping the average constant.

Statistically significant differences between the sexes occur only in the case of the test taken home, the Party tests, and the Lie test, although the girls are also considerably more deceptive than the boys on the Puzzle tests and in the Athletic Contest. In the case of the parties and the last two types of deception, the cases are too few and highly selected to warrant drawing any generalization, and we have already pointed out the ambiguity of sex differences on the SA test of the tendency to lie in order to gain approval. There remains, then, only the home test; and even on this, as we have suggested, there is strong probability that the cause of the difference is to be found in the superior motivation of the girls rather than in an inferior sense of honor.

INTELLIGENCE AND CHEATING

Wherever a school record of the ages of the pupils was available we used it, and elsewhere we depended on the statement of the children themselves. Even so the facts as to age were far less subject to error than the miscellaneous intelligence scores we could secure. Here again we used the school records, but as four or five different tests were used by the schools the intelligence scores were not exactly comparable. In the case of populations tested with IER material we had of course the bona fide scores on the second day's testing as a satisfactory measure of intelligence,* and for populations F, G, H, I, J, and K we were fortunate in being able to have the Pintner Non-Language Tests administered to all our groups by the Department of Psychology of Teachers College. The complete list of intelligence tests used or found is as follows:

Population	Tests Used or Given
A	IER
B	IER
C	IER and National Intelligence, Scale A
D	Stanford-Binet
E	Otis Advanced
F to J	Pintner Non-Language
K	Stanford-Binet
L and M	McCall Multi-mental
N	Terman Group Test
O	
P	IER and Stanford-Binet
Q	IER and Stanford-Binet
R	Stanford-Binet
S	IER

---

* See Chapter III, pages 52–53. These tests are fully described by Dr. Thorndike, to whom we are indebted for their use, in his *Measurement of Intelligence*, Teachers College Bureau of Publications, 1927. Following his nomenclature, we shall hereafter refer to these as the CAVI measure of intelligence, the initials standing for the four types of material used in the tests.

These scores were expressed in some cases as mental ages and in some cases as point scores. In some instances an intelligence quotient was either available or calculable and in other cases it was not. Since intelligence increases with age and we did not wish the relation between intelligence and deception to be mixed up with even the slight relation found between age and deception, it was necessary to express our intelligence scores in such a way as would relieve them of dependence on chronological age, somewhat as the IQ does by dividing mental age by chronological age. These two problems — to make our scores comparable and to keep them free of the age factor — we solved in the following manner. First we expressed each child's intelligence score as a deviation from the mean score of his age and in terms of the SD for that age distribution, thus transmuting all scores into comparable units. Next we adopted a letter rating scheme similar to that used with the Army tests.

The upper 5% were rated A.
The next 10% were rated B.
The next 20% were rated C+.
The next 30% were rated C.
The next 20% were rated C−.
The next 10% were rated D.
The lower 5% were rated E.

By this scheme, the letter A is applied to the 5% whose test scores deviate upward the most from the mean scores of their respective ages. As the means, SD's, and percentages are based on some 3000 cases they are reasonably satisfactory.*

* Those accustomed to thinking in terms of IQ may wish to refer to the following approximate IQ equivalents:

A	IQ, 140 and up
B	IQ, 120 to 139
C +	IQ, 110 to 119
C	IQ, 90 to 109
C −	IQ, 80 to 89
D	IQ, 60 to 79
E	IQ, below 60

As usual, the discussion of more technical problems may be found in the parallel chapter of Book Two (Chapter VIII). We follow here the plan used in presenting the facts regarding age, sex, and deception, printing only graphic summaries and tables of correlations.

Even a cursory glance at Figures 24 to 33 and Tables XIII to XVIII will make clear the association of honesty and intelligence.

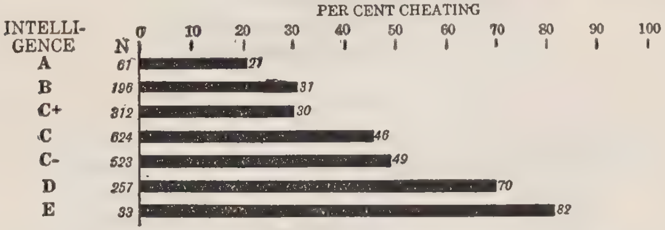


FIGURE 24

Per Cent Cheating on IER School Tests at Each Level of Intelligence (CAVI), Populations A, B, C, K, and Q

Except in the case of puzzles, cheating at parties, and stealing, there is a strong tendency for cheating to increase as the level of intelligence decreases. The *r*'s reported with Figures 27 and 28 show the amount of association between the type of deception involved and the A, B, C intelligence rating which we have just now described. Since these intelligence scores are sigma deviations from

TABLE XIII

Correlations between IER School Cheating and Intelligence Level (CAVI)

Population	Coefficient (r)
A	— .492
B and C	— .331
K and Q	— .489
All cases *	— .493

* See Book Two, Chapter VIII.

age norms, the factor of age is in effect eliminated, and the *r*'s give the relation between intelligence and deception, with age constant.

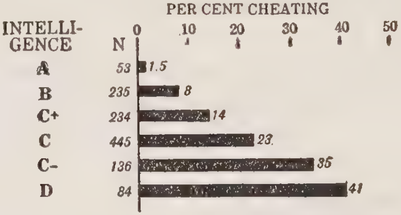


FIGURE 25

Per Cent Cheating on Speed Tests at Each Level of Intelligence (IQ), Populations C, E, D, and P

TABLE XIV

Correlations between Speed Tests and Intelligence Level (IQ)

Population	Coefficient (*r*)
C	− .385
E	− .410
D and P	− .469
L and M	− .302
All (N = 1514)	− .410

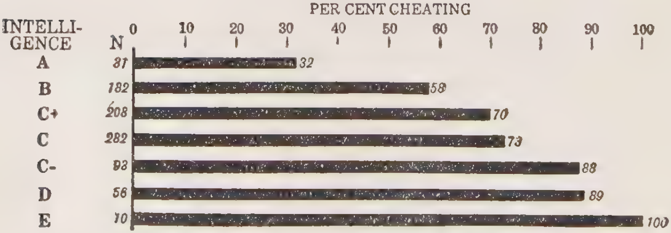


FIGURE 26

Per Cent Cheating on Coördination Tests at Each Level of Intelligence (IQ)

TABLE XV

Correlations between Coördination Tests and Intelligence Level

Population	Coefficient (r)
E	− .475
L and M	− .242
E, L, M	− .445

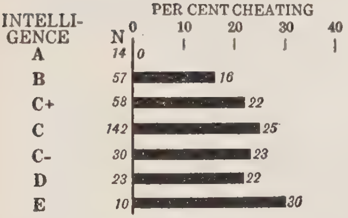


FIGURE 27

Per Cent Cheating on Puzzle Tests at Each Level of Intelligence (IQ), Populations D and R

r between Puzzles and IQ, − .183

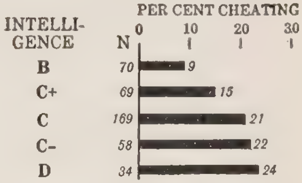


FIGURE 28

Per Cent Cheating on Athletic Contests at Each Level of Intelligence (IQ), Populations C and D

r between Cheating in Contests and IQ, − .235

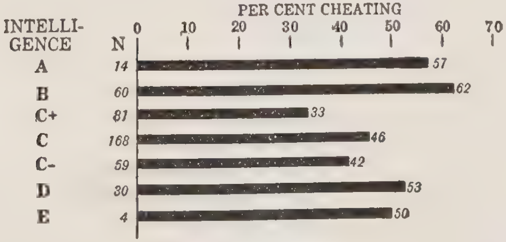


FIGURE 29

Per Cent Cheating at Parties at Each Level of Intelligence, Populations C and D

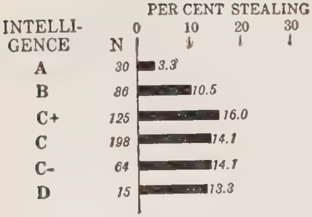


FIGURE 30

Per Cent Stealing at Each Level of Intelligence, Populations C, D, and R

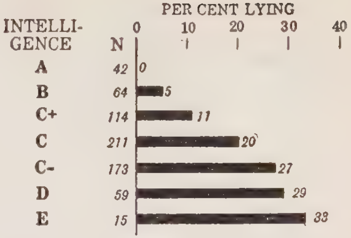


FIGURE 31

Per Cent Lying (SA) at Each Level of Intelligence

TABLE XVI

Correlations between Lying (SA) and Intelligence Level

Population	Coefficient (r)
A	— .333
D	— .399
P	— .327
Average	— .353

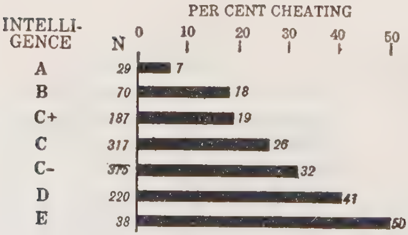


FIGURE 32

Per Cent Cheating on IER Home Test at Each Level of Intelligence (CAVI), Populations A, B, P, and Q

TABLE XVII

CORRELATIONS BETWEEN IER HOME CHEATING AND INTELLIGENCE LEVEL (CAVI)

POPULATION	COEFFICIENT (r)
A	− .258
B	− .238
C	− .248
P	− .345
Q	− .350
All cases *	− .255

* See Book Two, Chapter VIII.

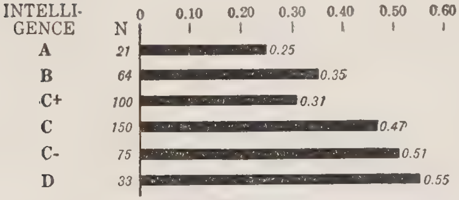


FIGURE 33

MEDIAN CT RATIO AT EACH LEVEL OF INTELLIGENCE, POPULATIONS C AND D

TABLE XVIII

CORRELATIONS BETWEEN CT RATIO AND INTELLIGENCE LEVEL

POPULATION	COEFFICENT (r)
C and D	− .278
L and M	− .247

From a perusal of the tables it may be seen that the r's for the IER school tests, the Speed tests, and the Coördination tests are all around −.40. Inasmuch as the test taken home and the Lying test consisted of only one test each, their respective *r*'s of −.255 and −.353 are really equivalent or even proportionately higher. Just why the *r*'s for the Puzzle tests and the Parties, Athletic Contests, and Stealing tests should be so much lower is not clear. Possibly the more intelligent, feeling no such sense of mastery in these situations as in the others, are more anxious about their achievement when pitted against their opponents, as in the Parties and Contests, or when confronted with a strange task, as in the Puzzles, and are therefore more strongly tempted to cheat than on school tests. The money test is in a class by itself, as here the stealing had nothing whatever to do with achievement in the test. The money was there to be taken or left. It is rather significant, therefore, that in this kind of situation the relation between intelligence and honesty should be so slight. It is difficult to see, moreover, why the more intelligent should have any feeling of confidence regarding their superior ability on the Coördination and Speed tests, for as a matter of fact ability on these tests does not correlate with intelligence.

Another way in which greater intelligence might indirectly influence the *r*'s might be through the association of greater intelligence with greater caution. The brighter pupils may be wary of getting into a false situation, and this would make them appear less deceptive quite apart from their genuine motives or ethical standards.*

Finally, there is a well recognized relation between intelligence and higher cultural levels, and as we shall see later, cultural level is definitely associated with honesty. Are the correlations between honesty and intelligence due, then, to this factor of culture? Not in the case of the test taken home, for Table XVII shows that populations P and Q, which since they are private schools represent a very narrow range of cultural background, have the higher *r*'s between home cheating and intelligence. If the cultural factor were primarily responsible, the reverse would be the case. We have also the following partial *r*'s between various deception tests and intelligence, with home background, as measured by methods to be reported later, kept constant:

---

* A similar capacity associated with intelligence is what is often called resistance to suggestion. As we shall point out in Chapter XIII, the correlation between one measure of suggestibility and the IER school tests is −.60. Keeping this factor constant, we find that the *r* between intelligence and school cheating drops from −.423 to −.193. Too much weight should not be placed on this partial, however, for reasons we shall present later, but suggestibility probably plays a large part in the association of intelligence and honesty of the classroom type. This would not account at all for the association of cheating and intelligence on the home test, however, for here suggestion plays almost no part at all.

TABLE XIX

PARTIAL *r*'S BETWEEN INTELLIGENCE AND DECEPTION, HOME BACKGROUND CONSTANT

TEST	POPULATION	N	OBSERVED *r*	PARTIAL *r*	*r*, HOME BACKGROUND INTELLIGENCE	*r*, HOME BACKGROUND CHEATING
School Xi	C + P	282	— .503	— .397	.362	— .504
Home Xi	C + P	244	— .305	— .240	.362	— .242
Speed	C + P	304	— .450	— .361	.362	— .385

The column headed " Partial *r* " shows the correlation between intelligence and deception with home background constant. That is, if all the children had come from homes of the same general social-economic level, the more intelligent would still have been the more honest.

It is quite possible, of course, that there are other factors bound up with intelligence, such as general biological superiority, which might still further lower the *r*'s we have reported between intelligence and deception. If all such factors are for the moment taken for granted and intelligence is regarded as standing for a highly complex social and biological phenomenon, we may summarize the facts for all the various deception tests by stating, as our best estimate of the relation between intelligence and a theoretical combination of *all* our deception tests, a correlation of −.50 to −.60.*

---

* See Book Two, Chapter VIII.

PHYSICAL CONDITION AND CHEATING

A child whose school work is made difficult by some physical handicap such as defective eyesight or hearing, undue lassitude, emotional disturbances, or pain is subjected to a greater temptation to cheat than the normal child, in order to compensate for his handicap in any way that presents itself. Whether deception is a characteristic method of compensation or whether the need for compensation expresses itself in an atrophied sense of honor is an important question for moral education. We are not in a position at present to offer an answer inasmuch as the necessary data were not available and the medical skill required for gathering them was not within the reach of our budget.

Although we were not able to determine the relation of physical condition to deception in the classroom, we were not thus limited in the case of deception in athletic contests, for the " events " of our Contests, it will be recalled, were themselves measures of the strength or physical ability required for success in the contest. In this respect these tests are analogous to the IER and Speed tests, which also measure the ability required for success in each. This is accomplished by means of the " double testing " procedure which is outlined in Chapter III. In the case of the physical ability tests, the examiner tried out the subject before allowing him to do the test by himself, and kept a record of the subject's " honest " ability. There were three such preliminary trials with the hand dynamometer, two with the spirometer, one with the pull-up, and two with the broad jump.

We selected these particular tests not only because they would give us reliable measures of the particular abilities involved but also because in combination they would yield a good measure of general strength or ability, which presumably helps to determine the attitude of an individual toward any physical contest. For evidence as to the validity of these tests we have depended on Rogers * and have followed his method of scoring and weighting them so as to secure a total physical ability score.

---

* *Loc. cit.*

The significance of physical ability, however, both as a factor in determining success in a contest and as a factor in influencing attitude toward a contest, lies not merely in its gross amount, but chiefly in the relation of the gross amount to what may be expected of a child of a certain age and weight. Of two children who have the same total physical ability score, the younger and lighter is obviously in better *physical condition.* Thus *ability* is analogous to mental age and *condition* to IQ. In competing with his peers it is condition rather than mere ability that provides the handicap which makes for confidence and success or trepidation and failure. We therefore found the physical ability norm for each age and weight and divided the individual's total score by this norm for his own age and weight.*

Having calculated our physical condition scores or ratios, we were now in a position to determine whether this factor was asso-

---

* Rogers used the first three of these tests in his battery of physical fitness tests. He used the standing broad jump as a measure of athletic ability. But we found it quite satisfactory as a test of physical ability. Following Rogers, we gave the following weights to the scores of these four tests:

Dynamometer in kilograms — times 2
Spirometer in cubic inches — times $\frac{1}{2}$
Broad jump in inches — times 1
Pull-up (chinning) — times chinned
  multiplied by $\frac{1}{10}$ weight in pounds
  plus (height in inches -48)

Some of our subjects could not pull up even once. In some instances we omitted this test because of lack of apparatus. In these cases we predicted the most probable chinning or pull-up score from the scores on the other tests.

Physical ability is a function of age and weight. Rogers found that height is not an important factor. To get a measure of *physical condition* corresponding to IQ, we followed the procedure of Rogers and determined first the norms for each age and weight. This was accomplished by plotting weight against the physical-fitness total score for each age. Ages 8, 9, and 10 were thrown into one plot; then separate plots were made for ages 11, 12, 13, 14, 15, and 16. In each plot we found first the line of relation, using medians for origins and Q's (semi-interquartile ranges) as units. The reasons for not using the regression of physical ability score on weights are given by Rogers on page 59. The normal physical ability score for each weight was read off the line in each age plot. This gave different physical ability expectations ciated with the practice of deception in the contests which we had set up. The facts are reported in Table XX, which gives the coefficients of correlation between physical condition and deception for both the athletic contests and the classroom tests, and for all deception tests combined.

TABLE XX

CORRELATION OF PHYSICAL CONDITION AND DECEPTION

r between Physical Condition and	Population C	Population D
Cheating in classroom	+ .157	− .126
Cheating in athletic contests . .	− .018	− .122
All deception tests	+ .202	− .186

One would hardly expect the type of physical condition thus measured to be associated with classroom deception, but it seems a little surprising that it is as little associated with the tendency to deceive in the very tests by which the ability and condition is measured. There is no evidence here that the oversized but understrengthened children compensate for their defect by resorting to falsification. Whatever deception takes place cannot be accounted for by physical limitations.

EMOTIONAL CONDITION AND CHEATING

It may be recalled that in populations A, B, and C a questionnaire which we called the Pupil Data Sheet was given to the pupils

for varying weights in the different age levels. Finally a physical condition score was obtained by dividing the pupil's actual score by the norm for his age and weight.

Rogers got reliabilities of over .90 with the first three of our tests. He does not report a reliability on the standing broad jump. We have estimated reliabilities on the basis of *honest scores*, using the highest of the first two with the highest last two in the case of the dynamometer, spirometer, and broad jump, and the first trial with the second in the case of chinning. These yield self-r's of well over .90, confirming Rogers' results. The reliability of the whole battery is at least .95.

after the IER tests had been given. Among the questions asked, all of which are printed in Appendix I, are the following:

17. What are you most afraid of?________________________
20. Which teachers have you disliked or not got along with?
21. Why have you liked or disliked certain teachers?________
26. Are you ever punished for doing something you know you ought not to have done?_____ About how often?_____
    By whom?______________________________________
    What kinds of punishment do you the most good?__________
    What kinds of punishment do not do you any good?________

We also used several questions from the Woodworth-Mathews list for measuring neurotic tendencies. From these two sets of questions we computed a neurotic index or index of maladjustment by counting one point for each abnormal answer to the Woodworth questions, one point for each two questions not answered in this list, one point for each object of fear named, one for each teacher disliked, and as many more points as there were punishments received weekly. We had no means of validating this index, but we did find, as will be shown later, that a small group of children who admitted having cheated had a significantly higher index than the most honest children.

In a normal population such as school B, we found the slight emotional disturbances and maladjustments registered in our neurotic index were also slightly related to the tendency to deceive. In this population the mean maladjustment score for the cheaters was 5.1 and of the non-cheaters, 4.6. The chances are 94 in 100 that this difference is not due to chance.

CHAPTER VIII

METHODS OF MEASURING THE CULTURAL BACKGROUND

At the very beginning of the Inquiry it became apparent that for our causal studies we should require some objective measure of the cultural influence of the home. For one thing, it is a commonplace of current psychiatry that many conditioning causes of social maladjustment are to be found in abnormal situations in the home through which certain personal relations among the members of the family become distorted. For another thing, we were ourselves discovering that something closely tied up with occupation, such as socio-economic level, was intermingled with intelligence, race, religion, and emotional condition in the association of these factors with deceit. These miscellaneous influences, which we have gathered under the general term "cultural background," we have attempted to study in two main ways. In the first place, we have dealt directly with the cultural factors themselves, either by observation of the homes or by getting from the children certain significant facts about their homes which experience proved they could report reliably. In the second place, we have dealt with the *effects* of these influences on the children, in so far as they were registered in measurable information, ideas, attitudes, emotions, and habits. These several methods will now be described.

THE SIMS SCORE CARD

The Sims Score Card is a standardized questionnaire which attempts to get at the facts about the home background by asking questions of the children. We were attracted to the possibilities of this method by an article * in which the late Dr. Chapman and Dr. V. M. Sims, then one of his students, supported the proposition that a score card could be produced which would reliably measure the socio-economic level of the home. As Dr. Sims was interested in following up this work as a research for the doctorate and as we were convinced that the instrument was worth the final expense involved in refining and standardizing it, we made an arrangement with him to press the work rapidly to a conclusion with the aid of such clerical help and other coöperation as we were able to supply. This work is described in a monograph† and the revised score card with directions for its administration and scoring are now available.

When Sims completed his score card no similar instrument had made its appearance, though various studies had been reported showing the relative significance of single facts, such as occupation, the possession of a telephone, number of books in the home library, and the like, as measures of economic status. Feeling that no single item could be an adequate index of the general level of the home, Sims combined a large number of items into a general socio-economic index, which we refer to in this book as the "Sims score." It will be of assistance in understanding just what is meant by this score if the way in which the score card was constructed is understood. We quote here from Sims's dissertation:

> "The problem arose out of an attempt to determine some of the selective factors operating in the participation in extra-curricular activities by high school students. The conclusion was soon reached that one of the most significant factors determining participation in these activities was the social level from which these students came. But there was no simple method of determining this level. Consequently, it was decided to attempt the construction of such an instrument. A preliminary study was

---

* Chapman, J. C., and Sims, V. M., "The Quantitative Measurement of Certain Aspects of Socio-economic Status," *Journal of Experimental Psychology,* Vol. XVI, No. 6, pp. 380–390.

† Dr. Sims's monograph has been printed by the Public School Publishing Company, under the title *The Measurement of Socio-Economic Status.*

made based upon material which had been previously collected in connection with the above mentioned study. These data were in the form of an elaborate questionnaire which had been given to the entire population of the New Haven High School. From this questionnaire those questions that were considered significant of the level of the home from which the child came were selected. The relative value of each question was determined on the basis of two criteria:

1. The correlation with the total of the others
2. The degree of intercorrelation between the test questions.

The questions selected were each weighted and combined into a total.

"The procedure used in this study is similar. The chief differences are (1) a more complete and reliable list of questions was used, and (2) they were subjected to far more careful testing before they were finally retained. The elaborations and refinements employed and the greater security of the statistical procedures, demanded in part because of the larger number of cases used, make the instrument here presented vastly superior for practical use to the tentative measure presented in the preliminary study."

Securing the Data from Which the Scale Is Built

The points considered in selecting the questions for the scale were the following:

1. Each question must be indicative of the economic or the cultural level of the home or of both.
2. The questions must cover as many aspects of the home background as possible.
3. The questions must be so stated that the child can understand them.
4. The questions must ask for information which the child is willing to furnish.
5. The questions must ask for information which the child can furnish.

6. The questions must be stated in such a manner that there will be a minimum chance of error.

7. The questions must allow answers that are comparable.

With these points in mind, fifty-six questions were worked out by Sims. He continues:

> "In selecting the questions the attempt was made as adequately as possible to cover aspects of the home and of the family life of the child. Starting with the questions which had been found significant in the original study, each new question considered was judged not only by the seven criteria listed above but also by an eighth: 'Has this special phase been covered by one of the other questions?'"

The preliminary list was tried out in a sixth grade, revised to meet the difficulties presented in wording, etc., and then printed for extensive use. In this form it was given to children in six New Haven schools which were rated by the superintendent as selecting children respectively from five levels of home background. Six hundred eighty-six blanks were filled out.

The following criteria were applied in selecting the twenty-three questions for the second revision made in coöperation with the Character Education Inquiry.

> "I. Ability of the children to furnish the information
> II. The internal consistency as a part of the total series, measured by:
>   A. Relatively high correlation with the total of all other questions
>   B. Relatively low degree of association with the other questions
> III. The reliability, as measured by per cent of unlike answers for paired siblings (children of the same parents)
> IV. The per cent of the population studied who possess the items called for in the questions
>
> "These questions, scored on the basis of the degree to which they approached these criteria, were totaled and averaged. This average is the measure of the socio-economic status.

> " The result, then, is a score card, with a manual of directions for giving and scoring, which expresses in a single figure (as opposed to the usual lengthy description) a rough measure of the cultural and economic level of the home. This score card may be administered to large groups in a period of twenty minutes.
>
> " The instrument is found to have a coefficient of reliability of .94, as measured by the correlation between the scores of two hundred paired siblings."

Typical questions on the score card are:

1. Have you a telephone in your home? . . . . YES NO
2. Do you have a bathroom that is used by your family alone? . . . . YES NO
15. Did your father go to college? . . . . YES NO
22. About how many books are in your home? (Be very careful in answering this one. A row of books three feet long would not have more than twenty-five books in it.)

25 or less 26–125 126–225 226–525 526–1000 more than 1000

THE GOOD–MANNERS TEST

Our first effort to evaluate home background by measuring its *effects* on the children grew out of the feeling that " manners " might afford a key to refinement of a sort that would be symptomatic of careful family training. In this preliminary skirmish we had the coöperation of a graduate student,* and the test, samples of which follow, was largely her own product.

The statements below are true or false. If true, draw a line under the word *True* in front of the statement. If false, draw a line under the word *False.*

(True False) If soup or any liquid is too hot, blow on it slightly to cool it.

---

* Miss Cora Orr.

(True False) In helping yourself to sugar always use your own spoon.

(True False) It is in good form to show general courtesies of " Please " and " Thank you " to waitresses and maids.

(True False) It is more important to be neat at school than at home.

(True False) If a boy meets his mother or sister on the street, he is not expected to tip his hat.

(True False) A boy should not detain a girl to talk on the sidewalk.

(True False) When yawning, make no attempt to suppress it by covering the mouth.

In the following, put a cross before the answer which you consider the best:

When not in use the teaspoon should be
1. Left in the teacup
2. Placed on the table
3. Placed on the saucer

Approval of a program may be shown by
1. Stamping feet
2. Clapping
3. Whistling

Answer the following questions. If the answer is " Yes," underline the word *Yes*. If " No," underline the word *No*.

Should a man tip his hat to a strange lady when picking up an article which she has dropped? . YES NO

If the door is closed, is it necessary to knock before entering a friend's room? . . . . YES NO

Is it considered ill mannered to turn and look at a person who has passed in the street? . . . . . YES NO

Jane introduces her roommates to her mother as follows: " Mother, may I introduce Miss Brown and Miss Thompson? " Is this correct? . . . YES NO

The test was scored in accordance with the judgment of presumably cultivated people and has interesting qualities.* We have evidence to indicate that whatever leads to knowledge of what to do in moral situations leads also to knowledge of what to do in "social" situations, using "social" in the narrower sense. We have no data to tell us just what the Good-Manners test measures, but the lead it offered seemed worth following up. This was done by another graduate student, whose work will be described after we consider a third procedure, on the results of which she depended for the validation of her test.

THE DIRECT STUDY OF HOMES

Our third effort to measure cultural influence took the form of an intensive study of homes by an experienced "school visitor."† Through the courtesy of the superintendent of schools and the board of education, we were able to secure her appointment as visitor in one of our communities while she was serving at the same time as a member of our staff. She was able to give us only a half year instead of the year we had planned for this work, but even so she visited one hundred fifty homes and succeeded in making fairly complete reports on over a hundred of them.

As a school visitor acts as an intermediary between school and home, it was helpful to have our representative introduced to the community by a leading article in the local paper as well as by official communications from the school to the parents and teachers. It was explained that she was coöperating with Teachers College in a research project, and that she was to visit representative homes in all sections of the town, not just a few homes selected because they furnished " problem children " to the schools. Nevertheless, although not asked to study them specifically, she came upon forty-four cases of maladjustment and was able to be of material assistance in several instances. The following quotation from her report to the school board will show briefly her method and results:

---

* Vocabulary was measured by a test devised by Miss Gladys Schwesinger and reported in her monograph "The Social-Ethical Significance of Vocabulary," *Teachers College Contributions to Education*, No. 211, 1926. Scores on the Good-Manners test correlate with intelligence .583, with chronological age .533, with the Schwesinger social-ethical vocabulary .720, and with the sum of seven moral knowledge tests .560. Even with intelligence constant the partial r between moral knowledge and good manners as thus measured is .426.

The moral knowledge tests referred to are described in the monograph "Testing the Knowledge of Right and Wrong," Religious Education Association, 1927, and are a product of the Character Education Inquiry.

† Miss Mabel Huschka.

> " In the case of each child whose social background was to be studied, the school visitor first interviewed the principal of the school which the child attended, in order to secure the data which he already possessed and to get the latest news regarding the child's school progress so that it could be reported directly to the parent. Next she consulted the school nurse, who proved to be exceedingly helpful. Then she consulted the secretary of the Social Service Federation, and if the family happened to be known to any branch of that organization, she was granted the privilege of reading the case record for the family, it being understood of course that she was to regard the information as highly confidential. These records were a very valuable source of information, for often the Federation had known the family under study over a long period of years. If the case were one which was still receiving assistance from the Federation, the visiting teacher interviewed the worker most closely in touch with the family in order to get any personal slants and opinions regarding the child's background which may not have appeared in the record. Having made these preliminary inquiries, she then proceeded with her visit to the home itself.
>
> " The number of homes studied was 150. This obviously included a much larger number of school children, for in many of the families there were several children enrolled in school. Geographically the homes were well distributed throughout the entire city, and concomitantly they were equally well distributed throughout the various 'social classes,' as we sometimes express it.

> " The data secured for each child in question was briefly as follows: economic status; home conditions; constructive and destructive influences in the neighborhood; education, occupation, health, and character of parents; and lastly, parent-child relationships including among other things the parent's ideals and 'expectancies' for his child, parental insight, and method of discipline.
>
> " That was the aim. Data on all points were not secured in every case, for the visiting teacher's method was not that of question and answer. What she did was to establish friendly feeling, direct the conversation to the subject of education in its broader sense, and then sympathetically listen to what the mother or father wished to say. In no case did she press for information upon a point surrounding which there was any suggestion of sensitiveness.
>
> " Of the 150 homes studied, in only one did the visiting teacher fail to receive a cordial invitation to come in and sit down, and that was in the case of a skeptical young mother who, as she put it, had 'been fooled so many times by book agents' that she could not be convinced that the visiting teacher's mission was of another kind. Not only were the parents cordial: they were earnest, and often in discussing the problems they had encountered in the perplexing field of child training, they spoke of matters and experiences which were of a very intimate nature."

As we were concerned to have all facts stated quantitatively, the problem of how to translate the usual qualitative descriptions of case studies into numerical scores was a serious one. We felt that the most reliable procedure would be to have the visitor state her facts in two ways, descriptively and quantitatively, and we therefore drew up a graphic rating scale on which each observation of the family status could be numerically expressed. The complete scale, as enlarged and modified by Miss Huschka, is printed in the Appendix, but the following samples will illustrate its general nature:

I. FAMILY					
A. Father					
2. Education	0				100
	Illiterate	Literate but little formal education	Finished grades	Finished high school	Finished college
3. Physical health	0				100
	Always sick	Usually sick	Occasionally sick	Fair health	Exuberant health
6. Church relationship a. Attendance	0				100
	No attendance	Occasional attendance	Irregular attendance	Regular attendance	
b. Interest and activity	0				100
	No religious interests	Routine religious observances	Occasional religious interests	Well-established religious convictions	
II. ECONOMIC STATUS					
A. Income	0				100
	Insufficient. Relief necessary all or part of time	Occasional relief necessary	Sufficient	Sufficient for comfortable standards of living	More than sufficient
C. Furnishings	0				100
	Inadequate. Less than bare necessities	Inadequate. Bare necessities	Fairly adequate. All necessities but in poor condition	Adequate and comfortable	Luxurious
III. HOME LIFE					
H. Mutual adjustment of parents	0				100
	Completely antagonistic. Abuse. Infidelity	Domination of one by the other. Suspicion of either's fidelity	Occasional quarreling of inconsequential sort	Supremely happy	
I. General atmosphere of household	0				100
	Constant friction and bickering	Members get along together	Gracious coöperation		
J. Attitude of mother toward child 1. Personal relationship	0				100
	Grudging, antagonistic. Willing to exploit	Selfish affection varying in degree or dependability	Generous, sympathetic, but fostering infantilism. Tendency to repress	Generous. High degree of insight. Tries to develop child's affection and independence	
K. Discipline	0				100
	No attempt at supervision. Discipline unintelligent and abusive	Inadequate. Divided authority	Kind and intelligent but left to one parent. Intelligent but variable	Kind and intelligent. Good example. Parents in agreement	

General factual material about the family, such as address, names of members, nationality, occupation, relatives, were placed on a Face Sheet, also printed in the Appendix, and the visits themselves were recorded sometimes chronologically and sometimes in classified notes on the basis of the following outline, the details of which were borrowed in part from the Westchester County Schedule and are printed in full in the Appendix.

I. Family
    A. Father
        1. Intelligence
        2. Education
        3. Physical health
        4. Physical defects
        5. Mental health
        6. Church relationship
        7. Personality habits and behavior
        8. Interests: civic and cultural
    B. Mother
        1–8, as for father
II. Economic status
    A. Income
    B. Shelter
        1. Ownership
        2. Size
        3. Other physical aspects
    C. Furnishings
III. Home life
    A. Housekeeping
    B. Meals
        1. Sufficiency
        2. Quality
        3. Palatability
        4. Regularity
        5. Mood
    C. Sleeping conditions
    D. Language spoken in home
    E. Employment of mother
    F. Integrity of family life

G. Marital status
H. Mutual adjustment of parents
I. General atmosphere of household
J. Attitude of parents toward child
    1. Personal relationship
    2. Ideals and expectancies
        a. Degree of ambition
        b. Occupation desired for him
        c. Cultural aspirations
K. Parental discipline
L. Recreation and amusements taken together

We were not able to check our visitor's ratings by the judgments of another case worker, but we had her repeat her own ratings on each family and check her own judgments in this way. Whatever errors she may have been temperamentally inclined to make will thus appear in all her records; and as her judgments were based on intensive study of actual facts which were selected for attention because of their observability as well as because of their importance, we feel that our procedure yields a fairly exact distribution of our cases. By comparing her case histories with her quantitative ratings we were able to make a further estimate of the reliability of her findings, as will be reported presently in connection with the Burdick Apperception test, which will now be described.

THE BURDICK APPERCEPTION TEST

Following out the principle embodied in the Good-Manners test, the Apperception test seeks to measure the cultural factors in the home by their influence upon the children. The four major problems faced in the production of an instrument of this kind were, first, the selection of the social factors which should be included; second, the discovery of the ways in which these factors influenced the children; third, the building of a test instrument with which to measure these effects; and fourth, the validation of the scores on such a test by reference to some direct study of the cultural factors themselves as these were to be found among the families of the children.

In view of the fact that we were securing quantitative records of the cultural background of some of our cases, as just now described, we felt that serious effort to produce a test of culture would be worth while and were glad to encourage one of our research students* to undertake the work. She says of her problem:

> " The present study makes an effort to develop a method of determining with a minimum of time and expense the home background of groups of children. Whereas intelligence tests seek to measure innate ability by questioning the child concerning those things which every child should know regardless of social and cultural opportunities, the test here described seeks to question him concerning those things he will know only if he has been subjected to certain sorts of environment, or the questions asked have been designed to stimulate answers significant of the environment in which he lives.
>
> " The first step in the preparation of the test was to make a survey of the elements in home environment commonly supposed to be contributing causes of character formation or of delinquency. In the vast amount of literature on the subject there are few case studies of children of superior character. Facts about good boys and girls are not given to the public, unless, after the passage of years, they appear in the form of biographies. On the other hand, there are a great many case histories of young delinquents and a number of carefully made studies of the home factors believed to be partly responsible for their deviation from socially acceptable conduct. The following analysis was finally made:
>
> I. Economic factors
>   A. Income
>   B. Living conditions
>   C. Members of the family working
>   D. Occupational level
>   E. Division of labor in the home
>   F. Recreational facilities for the child

---

* Miss Edith M. Burdick.

II. Cultural factors
    A. Familiarity with music
    B. Familiarity with literature
    C. Familiarity with nature
    D. Familiarity with art
    E. Manner of spending leisure time
    F. Knowledge of etiquette
    G. Breadth of view and freedom from prejudice
III. Ethical factors
    A. Affiliations with religious bodies
    B. Religious formulae observed in the home
    C. Character of the adult members of the family
    D. Nature and degree of parental supervision
    E. Attitude of members of the family toward one another

> "As was to be expected, but nevertheless unfortunately, it is most difficult to test the very elements upon which students of character place the most emphasis, namely, character of the adult members of the family, nature and degree of the parental supervision, and the attitude of members of the family toward one another. It was decided to omit any reference to distinctly religious matters. With the exception of G under II and A and B under III, some measure of all the items which appear in the analysis has been included in the test."

Several hundred items are included in the test, of which the following are samples, selected from its various sections.

1. Gets at the character of the house furnishings. The directions read: How good are you at guessing things? Do you know the game called "Twenty Guesses"? Somebody thinks of an object in the room and the other people may have twenty guesses as to what it is. This time an object belonging in a living room has been selected. Each pupil may have twenty guesses as to what it is. The teacher will tell the class later what the object is.

2. Indicates type of literary contacts. This is a completion test. The directions read: Each of the words given below has

another word (or words) which is usually used with it. Fill in the blank spaces.

Examples are:

Magazines	Books	Musicians
Snappy ______	Dr. ______	Josef ______
American ______	Thunder on the ______	John ______
Woman's ______ ______	The White ______	Galli ______
National ______	Encyclopedia ______	Irving ______
Yale ______		
Boy's ______		

3. Concerns the child's preferences for companions. It is in the form of a completion test. Examples are:

When I go to the movies I prefer to have ______ go with me.

When I go to church I prefer to have ______ with me.

In the evening I prefer to have ______ with me.

4. General cultural information. A multiple choice test, requiring the pupil to check the right answer. Examples are:

What is a second girl?

( ) A servant
( ) A little sister
( ) Next to the top in her studies
( ) The next to the oldest

What are the Psalms?

( ) Tall trees
( ) A book in the Bible
( ) Games
( ) A race of people

5. Further general information. The directions are: Underline the right word.

Examples: Beethoven was famous as a — poet — musician — painter — writer.

Hooch means — bricks — goblins — liquor — hoodlum.

6. Attempts to reveal family practices. The directions read: Some of these things tell about things which are usual or which happen often, and some of them tell about things which are not usual or which do not happen often. If what a sentence says is usual, draw a line under the word *Usual*. If what a sentence says is not usual, draw a line under the words *Not usual*.

Examples:

Each child in the family has a separate bed. Usual Not usual
The man beats his wife and children. Usual Not usual
The mother slaps the children and screams at them to make them mind. Usual Not usual

7. Refers to personal relations within the family. The directions read: Find the one word in each line which most nearly describes the first word in the line. When you have found this word, draw a line under it.

Examples: Father — strict, good, cruel, stingy, friendly
Mother — lazy, lovely, mean, kind, cranky

With these words referring to members of the family are a number of words intended to camouflage the real purpose of the test, but which also may have some diagnostic significance.

8. Concerns the household régime. Gives a list of duties which must be performed for nearly every household. The child is asked to indicate in each case the person or persons whose regular task it is to do the thing named.

Examples: To earn the family income __________
To teach the children how to behave __________
To serve the meals __________

9. States situations which have actually happened to children. The pupil is asked to write his best guess as to what happened next.

Examples: It was a cold winter's night and a snowstorm was raging. It was a whole hour before bedtime. The children said, "Mother, what shall we do next?" What did their mother say?

Edward's father had told him to come home immediately after school each night. One day Edward went for an automobile ride with a chum and did not get home until eight o'clock. What happened when he reached home?

10. A completion test, concerned with pertinent information.

Examples: Milk costs __________ cents a quart.
Most men I know go to work at __________ o'clock.
A boy's best friend is __________.

A rough method of scoring the test was worked out by comparing answers of populations which differed widely in social background. In the case of questions whose answers must be definitely correct or incorrect, right or wrong, only those were retained which distinguished the higher from the lower level. Other items which admit of a wide variety of answers were scored according to common sense and the combined ratings of judges. Reliability was found by correlating the scores on two forms of the test as scored by this first method.*

The validity of the instrument was assured in advance by the method of scoring, but only so far as it would distinguish between widely different groups. Its validity as an instrument to measure accurately the cultural background of individuals was found by correlating the test scores of the children whose homes were studied and rated by Miss Huschka with her home background scores.

But before doing this it was felt that Miss Huschka's ratings should be more carefully scrutinized. Accordingly we secured the services of another young woman† who had just been making a study of homes in relation to school achievement, and had her go over Miss Huschka's original descriptive data and classify the homes in some seventeen or eighteen social levels without reference to the quantitative ratings. Meanwhile Miss Burdick took the headings of the Huschka study and asked eighteen experienced students of family life to weight the various factors listed in accordance with their contribution to an all-around family. This request was worded as follows:

> "Consider that the following eight factors jointly create the qualities of a home capable of performing all its proper functions.

---

* The *r* between form I and form II (144 cases, — 36 each from grades 5, 6, 7, 8, population T) was .621.

The *r* between form I and form II (221 cases, — grades 5 and 6, population U, and grades 5, 6, 7, 8, population T) was .708.

The *r* between form I and form II (48 cases, — all the twelve-year-olds in the population U and population T groups) was .741.

The *r* between scale A and scale B (168 cases, — 28 each from grades 6, 7, 8, population C and population P) was .766.

† Miss Marian B. Nicholson.

How would you suggest that 100 points be distributed so that each of the eight factors be given its due weight? If you think that they contribute equally, give each 12½ points. If you consider some more important than others, give to those a greater proportion of points, provided each item be rated more than zero and less than 100.

1. Intelligence of parents. By intelligence we mean good planning and reasoning ability.
2. Education of parents. This refers to formal education, a parent being well educated if he has completed college.
3. Physical health of parents. This includes the presence or absence of serious sensory, motor, organic, or endocrine defects.
4. Interest of parents in church, civic, and cultural affairs
5. Personality and behavior of parents. By personality and behavior we mean social adjustment, responsibility in meeting obligations, mental health, degree of integration and of emotional stability.
6. Economic status as indicated by the family income, the nature of the shelter, the adequacy of the furnishings
7. Home life. By this broad term is meant the housekeeping, the meals, the sleeping conditions, the language spoken in the home, the mother's employment, whether there are outsiders in the home, the adjustment of the parents one to the other, the general atmosphere whether of friction or of coöperation.
8. Attitude of parents toward children. This means the personal relationship to the children, whether cold and antagonistic, selfish or generous and intelligently sympathetic, the ideals and expectancies of the parent for the child, the cultural aspiration."

From these ratings the score value or weight representing the combined opinion of the judges was found for each section of the rating scale, and each family's score for each section was multiplied by its weight or importance. When these weighted scores were added together they constituted the total background score for the family. These scores and Miss Nicholson's classification of the original case records gave almost the same results. Indeed they correlated +.90, which was rather high in view of the variety of ways in which the material was handled, and was felt to be a sufficient estimate of the reliability of the quantitative home background ratings made by Miss Huschka.

The next step was to correlate the first rough method of scoring the Apperception tests with the Huschka home background score. The final score assigned to each home was obtained by multiplying by two the score obtained from the weighted Huschka ratings and averaging it with the Nicholson rating. This was used as a criterion against which to validate the Apperception test. Of the pupils whose homes had been rated one hundred and twenty-three also took the test. The r between the test and the criterion was .659.*

The reliability was further tested by finding the r between the scores of 250 siblings. This is .499. The r between age and the Apperception test scores in this group is .186. With age of one sibling constant, the r between siblings is raised to .562. But the range of homes of the 123 cases was somewhat restricted. When allowance for this is made, the reliability coefficient becomes .60. This r, it will be observed, is lower than any of those obtained by correlating the scores on two forms of the same test. Even were the intelligence of the siblings the same, probably the same home can never *mean* exactly the same environment to two different children.

We now have before us four of the more elaborate methods we have used to discover and express in quantitative terms the cultural differences among the homes of our subjects, and are ready to point out such relations as we have found between these differences and the tendency to deceive.

---

* By weighting the scores the raw r goes up to .669; by correction for restricted range, to .695; and by correction for attenuation, to .95.

CHAPTER IX

ECONOMIC AND CULTURAL FACTORS ASSOCIATED WITH THE TENDENCY TO DECEIVE

We have used each of the four methods of measuring cultural level described in Chapter VIII for the purpose of discovering the relation of home background to deception. Although these measures are quite diverse and independent of one another, they show comparable amounts of association between culture and honesty. We shall venture later in the chapter a prediction of the correlation between several modes of deceptive behavior and a combination of certain of our methods of evaluating the social background, but we may well anticipate our discussion by reporting at once that the *average* of the *r*'s between all our home background ratings and our various classroom tests on all our populations is −.369.

THE SIMS SCORE AND DECEPTIVENESS

The measure we have used most extensively is the Sims score. We described in the previous chapter how this was based on a large number of facts about the parents and the home conditions, presenting a comprehensive picture of the economic and social status. The Sims card was used with schools C, E, F, G, H, I, J, L, M, and P. To illustrate the large differences among these populations both in the mean Sims score and in the range of scores, we print in Table XXI the distributions for five schools, ranging from a very low socio-economic level of 6 to a very high level of 17.

Many of our school groups are thus seen to represent restricted ranges of socio-economic status. In order to approximate the facts for the whole school population, we have therefore made such combinations of schools as would yield a set of scores spread well up and down the scale.*

TABLE XXI

Sample Distributions of Sims Scores

Scores	School P	Schools L and M	School C	School J	School F
17	7				
16	44	12	12	1	
15	85	26	19	3	
14	45	50	26	7	
13	14	45	26	7	2
12	4	39	22	16	9
11	2	29	29	30	27
10	2	19	37	68	52
9		17	20	132	91
8		7	17	178	117
7		2	5	133	69
6				9	11
Number	203	246	213	584	378
Mean	15.3	13.0	12.2	9.1	9.1
SD	1.18	1.89	2.41	1.61	1.37

Since the Sims scores range from 6 to 17, we now have at least nine clear socio-economic levels. The per cent of cheaters in the IER tests, both school and home, and in the Speed tests † are charted for each of these nine levels in Figures 34 to 36.

The association of socio-economic level with deception, which is so clearly evident from the diagrams of Figures 34 to 36, is less apparent in the case of the Coördination tests, the Athletic Contests, the Parties, or the general CT ratio or number of cheatings

---

* In view of the fact that these combinations were possible, this procedure seemed wiser than to depend on correction of correlations for restricted range. As an illustration of how selection affects correlation, it might be noted that the r between Sims score and school Xi is *positive* in school P and only slightly negative in school C, yet when the two schools are combined in one plot the r becomes $-.490$.

† Detailed tables are printed in Book Two, Chapter IX.

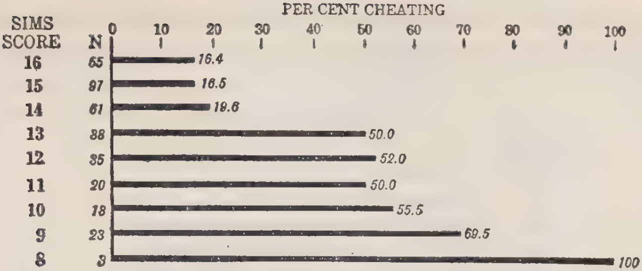


FIGURE 34

Sims Socio-economic Levels and IER School Cheating, Populations C and P

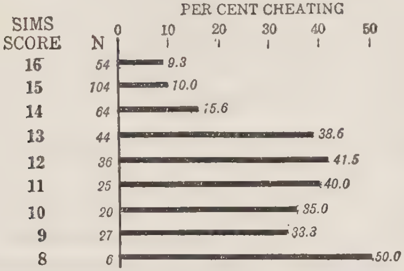


FIGURE 35

Sims Socio-economic Levels and IER Speed Tests, Populations C and P

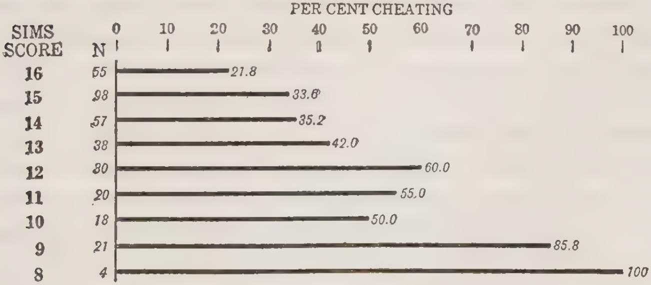


FIGURE 36

Sims Socio-economic Levels and Home Cheating, Populations C and P in ten chances. The facts for all the techniques are summed up in terms of correlation coefficients between Sims score and deception in Table XXII. The first column is the observed *r*, and the second column is the partial *r* with intelligence constant, showing what the relation between Sims score and deception is when the factor of intelligence does not enter to affect the matter.

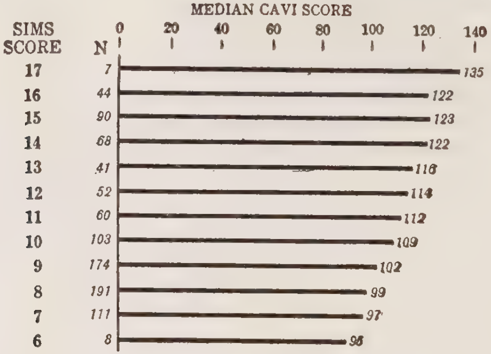


FIGURE 37

Sims Socio-economic Levels and Intelligence (CAVI), Populations C, P, and E

The extent to which the observed relation between socio-economic level and deception, as expressed by the *r*'s of the first column of Table XXII, is a function of intelligence or of some factor or factors of which intelligence is also a function is shown by the partial *r*'s of the second column. The IER tests show the closest relationship. If all the children had had the same intelligence, those coming from the higher social levels would still have cheated less on the IER tests than those coming from lower social levels. The IER tests, it will be remembered, are like regular school examinations or tests and involve the use of answer sheets and dictionary. They are therefore more probably connected in the children's experience with the teaching of honesty and with established habits of honesty than are the less usual peeping tests and speed tests.

The question of honesty at parties may never have arisen in the experience of the children of any social level, but it might well be supposed that in the case of the homes of higher social level some attention had been given to the question of cheating on school tests or of getting unauthorized help. By the same token, however, one would expect that athletic contests as well as school cheating would be a matter of home discussion or discipline, yet no difference in the behavior of the various social levels in the contest is apparent. It is quite possible, of course, that the factors favorable for the development of honor which we have just now attributed to the higher socio-economic levels may relate so exclusively to routine schoolroom practices and home practices as to have slight bearing on more unusual situations or on situations somewhat removed from family supervision. Certain it is that, in the Speed, Coördination, Athletic, and Party tests and in the combined deception tendencies measured by the CT ratio, to come from more favorably situated homes carries with it very little presumption of superior honesty.

TABLE XXII

Correlation of Sims Score with Different Types of Deception

School	Test	Observed r	Partial r, Intelligence Constant
Schools C and P	IER school Xi	− .490	− .399
Schools C and P	IER home Xi	− .307	− .156
Schools C and P	Speed Xi	− .294	− .165
Schools C, P, L, M, F to J	Speed Xi	− .293	− .207
Schools L, M, F to J	Coördination Xi	− .100	− .055
School C	Contest	− .100	− .078
School C	Parties	− .210	− .172
Schools C, L, M, J	CT ratio	− .130	− .104

THE GOOD-MANNERS AND APPERCEPTION TESTS IN RELATION TO DECEPTION

In these tests, which were described in the previous chapter, we are dealing not directly with the home or with facts about the home, but with the effects of the home that may be registered in the ideas, information, and attitudes of the children. The association of knowledge of good manners with deception can be reported only for 200 cases in school C. Here the *r* between the scores on this test and the IER school Xi is $-.376$, and the home Xi, $-.03$. With intelligence constant, the *r* with school cheating drops to $-.25$, but even this suggests a slight tendency for knowledge of etiquette and honest conduct in school to go together.

One form of the Burdick Apperception test was administered to schools C and P; and a much longer edition, made up of the best of three forms, was given to several hundred pupils of population A, including the cases selected for special study by our school visitor. Table XXIII gives the correlations between the Burdick scores and intelligence, age, and the Sims scores. For the intelligence scores we used the CAVI achievement scores obtained from these pupils some months previously.

TABLE XXIII

Correlation of Burdick Scores with Age, Intelligence, and Sims Scores

School	Age		Intelligence		Sims	
	N	*r*	N	*r*	N	*r*
A	455	.079	219	.529		
C and P	339	− .263	278	.409	311	.510

Table XXIV gives the correlations between the Burdick scores and two types of deception, together with the partial correlations when intelligence is kept constant.

TABLE XXIV

Correlation of Burdick Scores with Deception

School	IER School Xi			Speed Scores		
	N	r*	Partial	N	r*	Partial
A	208	−.463	−.285	449	−.450	−.415
C and P	282	−.385	−.319	304	−.375	−.233
A special	94	−.536				

* The *r*'s reported in Table XXIV have been corrected for errors of type I. See Book Two, Chapter VI.

Comparison of Tables XXII and XXIV will show that the Burdick test is more closely associated with intelligence than the Sims score card and, except for the Speed scores, less closely associated with honesty. The rather high *r* of −.536 for the special group is due to the fact that these cases represent the two extremes of honesty and dishonesty. The *r* of .510 between the Sims score and the Burdick score indicates that the two devices do not measure the same thing in the home background, yet whatever each measures is somewhat associated with deception. We may therefore profitably combine the two scores in a single home background score and correlate this with the three forms of deception reported for the Burdick scores on schools C and P. The results appear in Table XXV.

TABLE XXV

Correlation of Burdick-Sims Total Score with Deception, Populations C and P

IER School Xi			Speed		
N	r	Partial	N	r	Partial
282	−.504	−.374	304	−.385	−.236

Thus in these tests, when intelligence is held constant, we have significant partials between home background, as measured by Sims and Burdick combined, and deception.

QUANTITATIVE HOME BACKGROUND SCORES AS COMPARED WITH DECEPTION SCORES

The results of our direct study of homes will be given in detail in Chapter XIV, but it is appropriate to report here the correlations between the ratings assigned to the homes by our school visitor and the deceptiveness of the children from these homes. The cases we selected for study consisted of three groups, the most honest, the most dishonest, and a small group who admitted they had cheated when asked about it on the Pupil Data Sheets. Thus the two extremes of the population are represented rather than the population as a whole, and the r's are somewhat spurious in consequence. We will nevertheless report them for what they are worth.

In the case of cheating on the test taken home, the r between deception and the home background score is zero. That is, the children from the best homes cheated as much and as little as the children from the worst homes. This relation is due, however, not so much to the fact that there were children from good homes who cheated as to the fact that there were so many from poor homes who did not. That this may be in part accounted for by the lack of opportunity in the poorer homes to get the correct meanings of words on the Word Knowledge test is suggested by the fact that the r between home background scores and cheating in school is $-.40$.

Owing to the fact that home background is positively correlated with intelligence and cheating negatively correlated with intelligence, the relation between home background and deception would appear considerably reduced if the factor of intelligence could be kept constant. Unfortunately, the data do not permit the use of the partial correlation technique, but from other considerations we estimate that, if intelligence were constant, the r between deception and the home background scores of our visitor for an unselected population would be about −.30.

OCCUPATION IN RELATION TO DECEPTION

The quantitative ratings, the Burdick tests, and the Sims card all yield scores which are a composite of many factors constituting the cultural background of the home. It is rather surprising, therefore, that a single item like occupational level should prove to be as closely associated with honest behavior as any of these other more complex pictures of home background. Yet such is the case, as the charts which are to follow will show.

The facts concerning occupations were secured as follows: In populations A and B we distributed slips of paper and asked the pupils to give their father's occupation. To populations C, F, G, H, I, J, L, M, and P we gave the Sims Score Card, which asks four questions * about occupation from which it is possible to make a very satisfactory classification into four socio-economic levels. The classifications of schools A and B, being based on less information, are less accurate but are nevertheless made in accordance with the plan† used by the Sims card, which is as follows:

Group I. Professional, large business, managerial service, commercial service. Illustrations are accountant, architect, banker, broker, inspector, officials of various sorts, physician, teacher.

Group II. Artisan proprietors. Owners of small business, foremen, highly skilled laborers

Group III. Skilled laborers, such as plumbers, electricians, plasterers, mechanics

Group IV. Unskilled workers, day laborers

After we had classified the occupations of the fathers into these four groups, we took one school at a time, and for each occupa-

---

* The questions relate to name of occupation, ownership, title or position, and number of employees, if any.

† See the Taussig Scale.

tional group we made separate distributions of the different kinds of deception scores. Complete tables showing the median amount of cheating and the per cent of cheating for each of these groups, for each school and type of deception, are given in Chapter IX of Book Two, on the basis of which the following figures have been drawn. The detailed tables deserve careful study, but their general significance can be well seen from the accompanying drawings, which summarize the facts for the several combinations of school populations that are indicated in connection with each figure. The coefficient of correlation which is printed with each diagram is a "biserial r," figured somewhat differently from the r's discussed in Chapter VI but meaning much the same thing. In this case we take simply the fact of belonging or not belonging to one of the two top occupational groups — of being, that is, in the upper half or lower half of the occupational scale — and with this fact we associate the amount of deception. The resulting r shows the extent to which belonging in one half or the other half of the occupational level is associated with deception.

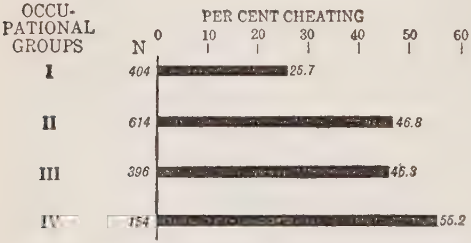


FIGURE 38

Occupational Differences, IER School Cheating, Populations A, B, C, and P

$r = -.450$

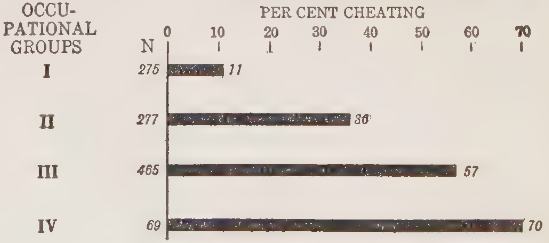


FIGURE 39

Occupational Differences, Speed Tests, Populations C, L, M, P, and F to J

$r = -.549$

In each one of these figures showing occupational differences, group I stands out as conspicuously the least deceptive. In the Coördination test and the test taken home (Figures 40 and 41), groups II, III, and IV are much alike. On the IER school test (Figure 38) groups II and III are about alike, standing between I and IV. On the Speed test (Figure 39), there is a steady increase from I to IV, as there is also in the case of the CT ratio (Figure 42), which shows the number of times a pupil cheated in proportion to the opportunities offered. As the CT ratio offers the best summary of the total situation, the means as well as medians are printed in Table XXVI together with the SD's * and SE's,* or standard errors of the means.

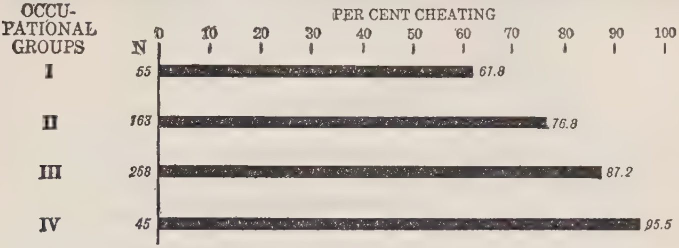


FIGURE 40

Occupational Differences, Coördination Tests, Populations L, M, and F to J

$r = -.284$

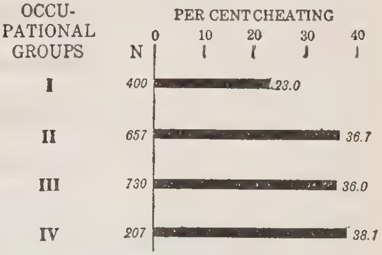


FIGURE 41

Occupational Differences, IER Home Cheating, Populations A, B, C, P, and F to J

$r = -.089$

---

* Those unused to these terms may need to refer occasionally to Chapter VI. The SD, or standard deviation, is the usual measure of variability. The standard error is the usual measure of unreliability. A mean may, in a large number of similar groups, vary *by chance* up to three times its SE in either direction. Also the *difference between* two means must be three times the SE of the difference for one to feel certain that it is not a chance difference.

From this table it can readily be seen that most of the group differences are statistically significant, for it will be recalled from Chapter VI that the unreliability of the difference between two

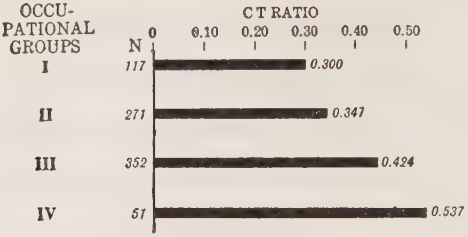


FIGURE 42

Occupational Differences, CT Ratio, Populations C, L, M, and F to J

$r = -.275$

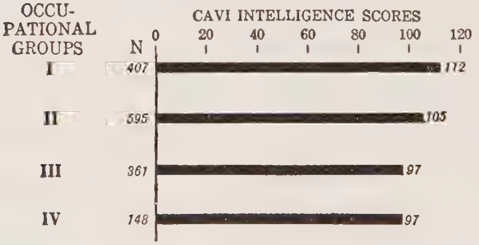


FIGURE 43

Occupational Differences, Intelligence (CAVI), Populations A, B, C, and P

TABLE XXVI

Occupational Differences in CT Ratio, Populations C, L, M, and F to J

Group	N	Median	Mean	SD	SE
I	117	.300	.303	.217	.020
II	271	.347	.352	.233	.014
III	352	.424	.432	.230	.012
IV	51	.537	.530	.258	.036

means is shown by the formula $\sqrt{SE_1^2 + SE_2^2}$. The differences between proximate groups in multiples of their standard errors are as follows:

Group II minus group I	2.0
Group III minus group II	4.3
Group IV minus group III	2.6

As explained in Chapter VI, to be completely outside the limits of chance, these differences should be three times their standard errors; and this is the case not only between II and III, as shown by the table, where the difference is 4.3 times its SE, but by inference between I and III, I and IV, and II and IV. The chances are 977 in 1000 that the difference between II and I is a genuine difference and 995 in 1000 that the difference between IV and III is significant. The relationship of occupational level to deception is also shown by the r's printed with each figure. These are all negative and significant.*

It is a curious thing that the *Word Knowledge* (home) test and *Coördination* (peeping) test show little difference between groups II, III, and IV, either in the median amount or the per cent taking advantage of the opportunity. Group I maintains its superiority, however, here as elsewhere. In the home test it may be that among the other occupational groups the children could get little help at home, anyway, perhaps because of greater use of foreign languages, or more illiteracy, or fewer dictionaries to which they might turn for help. Or there may be a difference in the degree to which children of different social levels are stimulated to make an effort to get a good mark by the word knowledge type of test, which was the one taken home.

In the Coördination test results, as shown in Figure 40, we see a discrepancy between the rise in amount of cheating and in percentage of cheaters. Apparently in this peeping test, as we go down the scale from II to IV there is a strong tendency for a larger proportion to open their eyes and get help but to make less and less use of the advantage which this gives them, perhaps because they are progressively less bold or less ambitious.

---

* The PE of none of them is over ±.03.

The question will at once be raised as to whether the occupational differences in deception may not be due to differences in intelligence, in view of the correlation between deception and intelligence already shown in Chapter VII. Figure 43 gives weight to the suggestion that this may be the case, for level of intelligence certainly is associated with level of occupation. It is not possible to use the partial correlation technique to determine the matter; but since we have the correlation between CAVI intelligence scores * and the IER type of deception, we can tell, in the case of these school tests, whether the deception shown by each occupational group is greater or less than their median intelligence would lead one to expect. The facts are shown for the school Xi in Table XXVII, last column. This gives the median Xi score of all children in that population whose CAVI score is the same as the median of the occupational group concerned. The "expected" median is what one would expect the group concerned to exhibit, on the average, unless other factors than intelligence are at work to affect the amount of deception.

TABLE XXVII

COMPARISON OF OCCUPATIONAL DIFFERENCES IN SCHOOL DECEPTION ACTUALLY FOUND, WITH DIFFERENCES THAT MIGHT BE EXPECTED BECAUSE OF DIFFERENCES IN INTELLIGENCE, POPULATIONS A, B, C, AND P

GROUP	N	ACTUAL MEDIAN Xi	EXPECTED MEDIAN Xi
I	404	2.0	3.8
II	614	4.0	4.5
III	396	5.8	5.3
IV	154	6.0	5.3

Thus it may be seen from Table XXVII that, while groups III and IV cheat somewhat more than one might expect from children having their intelligence, groups I and II cheat less than would be expected — group I very much less. Furthermore, the *expected* difference in amount of cheating between group I and group II is only .7 Xi (4.5 − 3.8), whereas the difference *actually found* is 2.0 Xi (4.0 − 2.0), or nearly three times as much as difference in intelligence alone would account for.

---

* See Chapter VII.

This comparison is made only for the school Xi, since on the home test there was little difference between the groups anyway and on the Speed and Coördination tests the *r* between cheating and intelligence is nearly zero in these particular school populations, so that intelligence could not be the determining factor in any case.

These indications all point to the conclusion that something more than difference in intelligence is needed to account for the occupational differences in the tendency to deceive.

OCCUPATION AND GENERAL SOCIO-ECONOMIC LEVEL IN RELATION TO DECEPTION

In connection with our study of the relation of occupational level to deception we printed with Figures 38 to 42 a series of biserial *r*'s. It is of some interest to compare these *r*'s with those showing the relation of Sims scores to deception. For convenience both sets are gathered in Table XXVIII, with the *r*'s determined from populations on which both sets of data were at hand.

TABLE XXVIII

Sims Score and Occupational Level Compared as to the Association with Deception

Test	Sims Score *r*	Occupation *r*
Schools C and P, School IER Xi	− .490	− .322
Schools C and P, Home IER Xi	− .307	− .426
Schools C, P, L and M, F to J, Speed Xi .	− .293	− .594
Schools L, M, F to J, Coördination Xi . .	− .100	− .284
Schools C, L, M, J, CT ratio	− .130	− .275

In every case except the IER school Xi, the occupational level correlates higher than the Sims score with deception. This suggests that there is a difference among the factors which enter into the total socio-economic status and that the more significant factors are buried in the total score. This is only to be expected, as the Sims card was prepared for the purpose of measuring not deception, but home background.

SIMS–BURDICK–OCCUPATION COMPOSITE

In view of the fact that the Sims and Burdick tests and the occupational rating involve different sets of home background factors,* it seemed wise to combine them in one score and find the correlation of this more comprehensive measure of home background with deception. These *r*'s for the IER school Xi and the Speed Xi are respectively −.608 and −.507.

SUMMARY

The relation between economic and cultural factors and the tendency to deceive has now been indicated in a variety of ways, which need to be brought together for final comparison and evaluation. Table XXIX does this for us, ignoring differences in populations tested.

TABLE XXIX

SUMMARY OF *r*'S BETWEEN CULTURAL FACTORS AND DECEPTION

TYPE OF DECEIT	OCCUPATION LEVEL	SIMS SCORE	GOOD MANNERS	BURDICK SCORE	VISITOR'S RATING	SIMS-BURDICK	SIMS-BURDICK-OCCUPATION
IER school	− .322	− .490	− .376	− .463	− .400	− .504	− .608
IER home	− .426	− .307	− .030	− .037	− .190	− .243	
Speed	− .594	− .293		− .450		− .385	− .507
Coördination	− .284	− .100					
CT ratio	− .275	− .130					
Contest		− .100					
Party		− .210					

---

* The inter-*r*'s are as follows: Sims-Burdick, .510; Sims-occupation, .759; Burdick-occupation, .475. For the *r*'s between occupation and deception tests we took Pearson product-moment *r*'s instead of the biserials already reported.

For the IER school cheating, the Sims-Burdick-occupation correlation is probably the best indication we have at present of the relation between this type of deception and the cultural aspect of the home background of the pupils, and with intelligence constant this *r* would be approximately −.40. We are not as yet in a position to make as satisfactory a prediction of the true relation between deceptiveness in general and the cultural background as we have made in the case of the relation between intelligence and deception, and it is hazardous to guess, since the data are insufficient. Pending further information, however, we give as our present judgment the *r* of −.45 as expressive of this relation and estimate that with intelligence constant this *r* will be reduced to −.30.

CHAPTER X

THE BIOLOGICAL *VERSUS* THE CULTURAL INFLUENCE OF THE FAMILY *

We have had occasion to mention the complex character of much of our data. Nowhere is this better illustrated than in any study of the family, for here is the meeting ground of a host of cultural and biological factors the external manifestation of which may be a child's perfectly simple act, like shaking hands, or a highly complex act, like playing a Bach fugue. It has been one of the perennial interests of educational philosophy and research to try to unravel this web of social and biological factors into its components and estimate the extent to which the behavior of the children is the product of experience on the one hand and of heredity on the other.

Deceptive behavior is, of course, a case in point. While the direct and inciting occasion for a dishonest act may lie wholly outside the family, the predisposition to deceive rather than to be straightforward may arise from a variety of family experiences and inherited tendencies. The amount of these combined factors, so far as their source is within the family, is roughly indicated by the correlation† of siblings (children of the same parents) with respect to the tendency in question, inasmuch as individuals paired at random from the community would correlate zero. In order to discriminate between the social and biological factors, it would be necessary to measure the resemblance of siblings who had been absented from the social influence of their homes from earliest infancy. Supplementary data could be secured from a study of foster children brought up in the same home and of "identical" * twins as compared with non-identical twins and ordinary siblings. Our own material is not so comprehensive as this and does not afford conclusive evidence regarding the relative significance of heredity and environment as predisposing factors in deceptive behavior, but some light is thrown on the problem by the resemblances that we have found between siblings, which seem to us to justify reporting the facts.

---

* The substance and much of the form of this chapter appeared first in the *Twenty-Seventh Year Book* of the National Society for the Study of Education, 1928, and is used here with the permission of the Public School Publishing Company.

† If the two members of each pair of sibs were identical, the r would be $+1.00$. If each were the antithesis of the other in every pair, the r would be -1.00. If they resembled one another no more than they would by chance, the r would be zero.

We shall first describe briefly the populations from which our sibling data are drawn and mention the tests to which the children had been subjected.

Population A. Suburban community with wide range of home environment, running from homes of comfort and affluence to those of abject poverty. The IER school and home tests and the Speed tests were used here.

Populations L and M. A smaller suburb in another state, containing only two schools. A narrower range of home background, lacking the lower end of the scale. The Speed and Coördination tests were used.

Populations F to J. Five schools in a congested city district, racially homogeneous and rather uniformly low on the economic-social scale. The Speed, Coördination, and IER home tests were used.

Population B. Several schools in a mid-western town of 200,000 inhabitants, representing a fairly wide range of home background. The IER school and home tests.

Population E. A suburban junior high school, homes above the average. The Coördination tests.

Populations K and D. Children from broken homes, those of

---

* By "identical" twins is meant twins who are in most respects almost exactly alike — a phenomenon which may result from the fact that they are produced from like gametes rather than unlike gametes.

K being orphans. In both cases these institutional children were from the same social background as populations F to J. The Speed and Coördination tests were given to D and the IER school tests to K.

RESULTS

In order to make our discussion of the facts at all clear, it will be necessary to state them first in the form of a comprehensive table to which the reader may refer as the chapter proceeds. The basic facts appear in Table XXX, and certain important supplementary

TABLE XXX

Statistical Results of Sibling Study

Test	Population	N Pairs	r	σ
Speed	A	76	.220	3.27
	L, M	70	.292	1.59
	F to J	224	.208	3.42
	A, L, M, F to J	370	.225	3.00
	D	43	.300	2.65
IER school	A	108	.445	1.46
	B	138	.433	1.50
	A, B	246	.440	1.38
	K	94	.333	1.82
	$+\frac{1}{2}$ K *	38	.333	1.73
	$-\frac{1}{2}$ K *	46	.333	2.03
Coördination	F to J	239	.322	2.62
	L, M	74	.271	3.02
	E	89	.271	2.80
	F to J, E, L, M	402	.400	2.86
	D	43	.300	2.73
IER home	A	104	.641	2.47
	B	88	.472	2.25
	F to J(1)	94	.695	2.13
	F to J(2)	55	.832	2.73
	A, F to J, B	345	.705	2.62

* $+\frac{1}{2}$ means those in the institution more than half their lives and $-\frac{1}{2}$ means those in the institution less than half their lives.

material will be found in Book Two, together with arguments which are too technical to be presented here. Column 1 gives the population, referring by letter to the groups described. Column 2 is the number of pairs of siblings in each case. Column 3 gives the correlations * between pairs. Column 4 gives the standard deviations of the scores of all the cases.

INTERPRETATION

Before indicating the bearing of the facts of the table on various hypothetical explanations of sibling resemblance, certain features should be noted. The important comparisons are between the different behaviors on the one hand and the different populations on the other. First, as to behaviors. The test taken home elicits the greatest resemblance between siblings, doubtless partly because of collusion. The IER school test comes next, perhaps because the copying type of deception is more consciously dealt with by parents. The Speed and Coördination tests come last, but still show genuine resemblance.

Second, as to populations. The orphans, K and D, were not given the home test; but of the other populations, the congested population, F–J(1) and F–J(2), shows the greatest resemblance. In F–J(1) and F–J(2) two schools are combined, a better and a worse, in each case. The average r for all of F–J is .763. In the other behaviors little difference among the normal populations is found, but in the case of the IER school test there is considerable difference between the normal and the orphan groups.

We have now to account for these likenesses and differences among the populations and point out their significance for the interpretation of the sibling resemblance. We shall discuss four possible explanations: collusion, common environment, intelligence, and heredity.

---

* In computing these correlations all combinations were inserted where there were more than two siblings in a family. Also each pair was entered twice, each individual thus appearing on both the X and the Y axes of the scattergram, making the plot symmetrical, with N equal to the number of entries. For illustration, see Figure 44 on page 236.

A. COLLUSION

This is possible only in the task done at home. Here we may expect that some children will either help one another or encourage each other in the use of forbidden aids. The size of the sibling *r*'s bears out this expectation. For all populations it is .705 and runs as high as .83 in one group containing fifty-five pairs. This is considerably higher than the reliability of this single test and indicates that there is greater likelihood that two siblings will cheat in equivalent amounts on a single occasion than that the same child will cheat in the same way on two occasions. If mere general home influence were the prepotent influence, this would not be the case. As a matter of fact, we saw in the previous chapter that there was only the slightest relation between cultural level and cheating at home, showing that whatever makes siblings resemble one another in deception on home work is not the kind of thing in which homes as such differ from one another, so far as we have measured them. The correlation between a pupil and those he names as his friends and companions and who do not, therefore, live in the same home is +.03.

Furthermore, if siblings helped each other on the home test or got help from a common source, one might expect the older to exert the greater influence. This cannot be shown from our data; but it is of interest that, although there is no great difference between the mean of the older and the mean of the younger, yet in a population of 119 pairs 9% were identical, in 61.5% of the pairs the younger cheated more than older, and in 29.5% of the pairs the older cheated more than the younger. The older and younger were nearly alike in variability.

B. COMMON ENVIRONMENT

There are, of course, other home factors than collusion and direct assistance or example that make for honest rather than dishonest behavior, or *vice versa*, such as code, ideal, or general social stability, so that one might expect that two children reared in the same home would, by sharing certain common experiences, become more alike than if one were reared in one environment and the other in another. Of course the home is not really identical even for its own children, but certainly the range of social experience offered by a large number of homes is far wider than that offered by one. So far as deceptive behavior is built by experience in the family into habit systems and is not a mere matter of collusion or example in the home, it should appear in the correlation between siblings on tests taken *away* from home. We have already pointed out the existence of such correlations as are found in column 3 of our table, and it is our task in this section to determine, if possible, whether these correlations are to be wholly accounted for by this common experience of siblings in the family.

Reverting to the facts reported in the previous chapter, we might state the problem as follows: We noted there the existence of some sort of nexus between deception and cultural level. To the extent that this cultural level is a function of the home we should expect, therefore, to find a correlation between siblings brought up in the same home. That is, they should resemble one another more than they resemble children chosen at random from the community. The question then is, on the one hand, whether the sibling correlation is *merely* the natural consequence of such home influence or whether there are factors determining sibling resemblance other than the cultural unity of the home; and, on the other, whether the correlation between deception and home background may not be in part biologically determined, the higher culture being associated with biological difference of some kind.

We have four ways of investigating this problem to which we shall now turn, *viz.*, (1) the relation of the size of the sibling r to the range of home background represented; (2) the partial correlation technique, keeping home background constant; (3) a similar procedure, comparing the r's from different narrow levels of home background with the r's from the entire range of home background; and (4) the comparison of the actual sibling r's with those which might be statistically predicted if home background were the sole cause of the relation observed.

Method 1. The populations reported in the table offer about as wide divergence as is likely to be found in cities and suburbs. The inclusion of rural groups might have extended the range somewhat, but it is certainly wide enough to allow for variations in the size of the sibling correlations as longer or shorter sections of the entire range are taken for comparison. This may be illustrated by the scattergram of Figure 44, on which are plotted the sibling scores of populations B, C, F–J, P, and Q for the IER home test.

In this scattergram each dot represents the scores of a *pair* of siblings. The score for one member of the pair is placed opposite

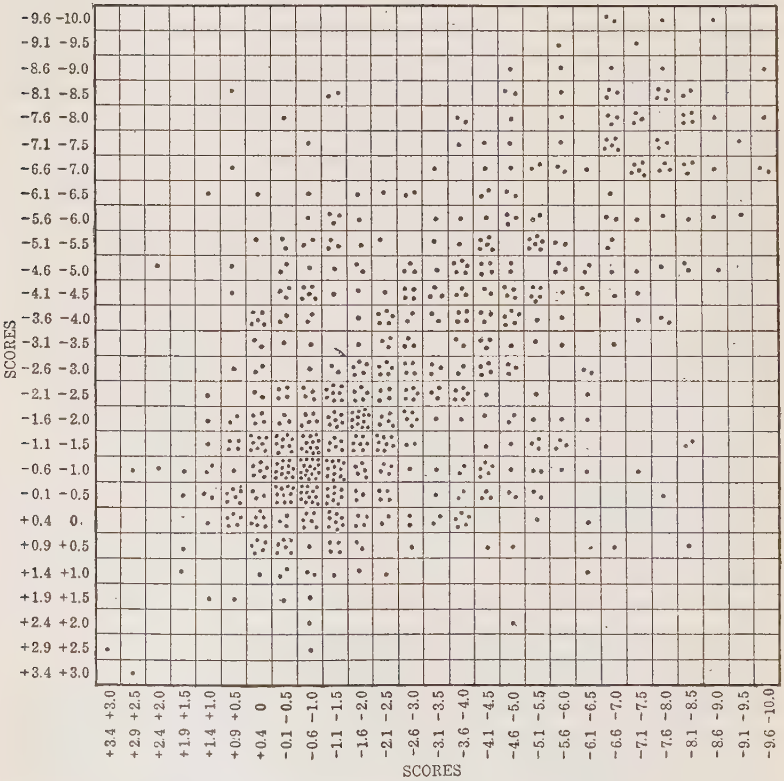


FIGURE 44

Scattergram of Sibling Scores on IER Home Test the proper point on the left-hand scale, and the score for the other member of the pair is placed over the proper point on the scale at the bottom. Then another dot for this same pair is entered by putting the score for the first member over the proper point on the bottom scale and the score for the other member opposite the proper point on the scale at the left. If there are more than two siblings in the family, all combinations are entered in the same way; thus for A, B, and C there would be A–B, A–C, and B–C, each entered twice by the method just now described.

If there were a correlation of +1.00 between home background scores and deception, by removing the cases with higher home background scores we would automatically shorten the range of deception scores. The scattergram that would be left would give an *r* much more like that of the scattergram of Figure 13, page 164, being reduced nearly to zero. On the other hand, if there is no relation at all between home background and deception, removing the cases with higher home background scores will not in the least affect the general appearance of the scattergram, for the cases that are removed will be removed at random rather than from one end. We know from the work already reported that home background does correlate somewhat with deception; and we should therefore expect that, if the resemblance of siblings is due to these measured factors alone, the lower sibling *r*'s should be found in populations with narrower range of background. If it should turn out upon investigation that such were not the case, then this could properly be taken as evidence that the features of social background included in our measures are not the sole cause of the resemblance of the siblings.

In order to test the matter, it is necessary to indicate in some way the range of background represented in each of our populations. Partly by observation and common consent and partly by reference to the Sims scores already described, we have made these comparisons, with the results shown in Figure 45.

The range of background for the two orphan groups is really much narrower than indicated in the chart, for no matter what the range of background from which they came they had for some time been living in *one* environment, as though all were children in one big family.

In width of social range the populations rank roughly K–D, F–J, L–M, E, B, A. To the extent that the social factors thus distributed are determinative of deception we should expect a corresponding variability in deception *r*'s. Table XXX shows that this expectation is not realized. For convenience the correlation ranks are gathered from Table XXX in Table XXXI, the columns of which are as follows: Column 1 gives the rank order of the various populations in spread of home background as in the chart. Columns 2, 3, 4, and 5 give the rank order of these same populations in the size of correlation coefficients between siblings for the four behaviors.

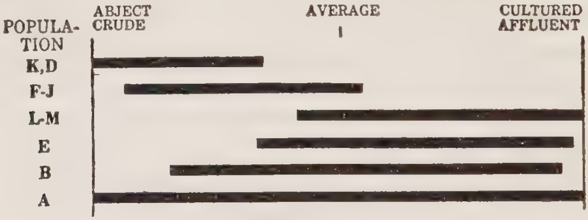


FIGURE 45

Range of Home Background Chart

TABLE XXXI

Rank Order of Populations in Social Variability and Sibling Correlation

Population	1	2	3	4	5
	Range of Background	Speed	IER School	Coördination	IER Home
D	1	2		2	
K	1		1		
F to J	2	1		3	5
L to M	3	2		1	
E	4			1	
B	6		3		1
A	8	1	3		3

From Table XXXI it can be seen that there is no *general* * correspondence between the size of the *r*'s and range of social background. Even the institutional population D, which is in a sense in one home, shows a larger sibling resemblance than populations F–J or A on the Speed test and a larger sibling resemblance than populations L–M or E on the Coördination test. Table XXX also shows that in orphan population K the children who had been living in the institution more than half their lives (" $+\frac{1}{2}$ " of Table XXX) show the same sibling *r* as those who had been in the institution less than half their lives (" $-\frac{1}{2}$ " of Table XXX) and only slightly less variability. If gross variation in environment is producing the sibling correlation, one would expect the *r* to be lower in the case of those who had been longer in the institution.

Method 2. The second method of testing the environmental hypothesis involves securing some measure of the variability of home background with a view to determining its correlation with deception. If we can arrive at even an approximation of the correlation between variation in homes and deception, we can then use the partial correlation technique and hold the home variation constant in the sibling *r*'s.

In our preceding chapter we gave the results of our efforts to measure the economic-cultural level of the home and reported the *r*'s between the various scores received and different types of cheating. Since the socio-economic scores are available for most of our siblings, we can apply the partial correlation technique † to our observed *r*'s between siblings in respect to their deception scores. The results are given in Table XXXII on the following page.

These partial *r*'s, which are based on the assumption that the *r* between siblings in home background features is +1.00, indicate that brothers and sisters who come from the same general background will still resemble one another much more than will nonrelated children of the same general background.

Method 3. As a check on this we took from populations L, M, and F–J all those who deviate more than about two sigma from the

---

* The rank difference *r*'s are given in Book Two, Chapter IX.

† For formulas see Book Two, Chapter IX.

TABLE XXXII

Sibling Resemblance, Sims Score Constant

Test	Population	Observed *r*	Partial *r*
Speed	A, L, M, F to J	.225	+ .237
IER school	A, B	.440	+ .364
Coördination	L, M, F to J, E	.400	+ .371
All tests		.470	+ .418

Sims socio-economic means. We found the *r* between the siblings for classroom deception beyond this extreme in the upper range to be .35 and beyond this extreme in the lower range .30. We then took a slice out of the middle, including all those between about +0.3 sigma and −0.3 sigma, and still got a correlation for classroom deception of about .35. These determinations check and verify the partials, suggesting quite definitely that the resemblance between siblings is not due merely to the influence of such factors in the home background as we have so far measured.

Method 4. The statistical procedures involved in the fourth method for testing the environmental hypothesis are set forth quite fully in Book Two and serve only to bear out what has already been stated.

Association. Another type of environmental influence is that of friendly association and classroom experience. As we shall show later, the latter tends to make children of the same class group resemble one another more than they would by chance; but as our siblings are almost invariably in different classrooms, this factor would not be operative. If the other type of association were wholly responsible for the sibling *r*'s, then we should expect a child and his *closest friends* to be as much alike as brother and sister, for a child runs with his friends as much as he does with his older or younger brother or sister. Yet when we correlate a child with one of his friends *not in the same classroom*, the *r* for population A on the IER school test is .159; and for population B, where practically all the friends named by the children were in the same classroom, the *r* between a child and one of his friends is .160, even with the classroom influence present to help in accounting for the resemblance. Our sibling *r*'s on this test are, as we have seen, from +.33 to +.44.

We may conclude our examination of the second general explanation of sibling correlations by saying that, while such environmental factors as we have been able to measure or observe are doubtless associated with deception and are in part influential in determining sibling resemblance in this regard, they do not account for all the resemblance found.

C. INTELLIGENCE

The third possible explanation of the resemblance of siblings in deceptiveness is that it is due to their resemblance in intelligence. We are already familiar with the fact that there is a correlation of about .50 between intelligence and deception, which is higher than that between home background and deception. Furthermore, as we shall see presently, siblings correlate with each other about .50 in intelligence. It is to be presumed, therefore, that intelligence may have a good deal to do with the sibling *r*'s reported. But it should be recalled at once that the children of the same family have the *same* home background, not different homes which resemble each other only to the extent of an *r* of .50. Hence we could hardly expect that intelligence could play so large a part in the determination of the sibling *r*'s as does the cultural factor in the environment.

TABLE XXXIII

SIBLING RESEMBLANCE, INTELLIGENCE CONSTANT

TEST	POPULATION	*r*	PARTIAL *r*, INTELLIGENCE CONSTANT
IER school Xi	A, B, C, P, Q	.440	.433
IER school Xi	K	.333	.330
Speed	E (F to J)	.225	.215
Speed	D	.300	.300
Coördination	E (F to J)	.400	.396
Coördination	D	.300	.300

The method of keeping constant the intelligence of the sibs is reported in Book Two. Table XXXIII presents the essential facts.

It is quite apparent from Table XXXIII that we do not affect our r's between siblings very greatly by partialing out variability in intelligence. We may turn then to our last proposed explanation of their resemblance in deception.

D. HEREDITY

We have mentioned the probability that homes may differ widely in other respects than socio-economic or cultural levels. There may be wide variation among homes of the same socio-economic level in respect to attitudes toward children, general stability and adjustment, or even codes and ideals. These subtle factors may be correlated with deception to a much greater degree than those factors which are distributed in accordance with general socio-economic level. The existence of such factors, which is indicated by our sibling correlations, is forcibly illustrated by the fact that whatever makes for dishonesty is left behind as we go up in the social scale, but whatever makes for honesty is not dropped out as we go down in the social scale. On the lower social levels, therefore, the correlation between deception and home background is zero.

Had all possible environmental factors been kept constant in the partial r's of Table XXXIII, we might claim that the remaining sibling resemblance in the matter of deception is due to biological factors. This statement of the hereditary factor is quite unsatisfactory, however, as nurture plays a rôle in the development of all measurable traits and is not " eliminated " in any true sense from any group of factors. Some elements in behavior, however, are usually regarded as less modifiable than others and more directly the result of biological growth than of interaction with the environment. General intelligence, for example, although its particular modes of exhibition are socially determined, is usually thought to change very little with training. Does the tendency to deceive belong in the same category, or is it due to particular environmental relations in which the prepotent factor or factors are subject to modification as are ideas or ideals or the ability to read or to translate Latin? The relatively innate factors * would be such as temperament, emotional stability, power of inhibition, response to persons as compared to things or ideas, and general intelligence.

It is commonly supposed that the correlation between the IQ's of siblings in a homogeneous age population of unrestricted range is around .50. Dr. Hildreth † summarizes work done up to 1925, showing that the actual results on over two thousand pairs run from .30 to .63. These yield an average of .48. Gordon's data on 219 pairs of orphans, when recalculated by Elderton by entering each pair twice in the scattergram, give a correlation of .467. Miss Hildreth reports .322 as the obtained r between 253 pairs of orphans. These two average .388.

The correlations between the IQ's of siblings in our own populations range from .118 to .350. How do these r's compare with those we have reported for the resemblance of siblings in deception? To facilitate the comparison, we have extracted from Table XXX the r's obtained on populations of widest and narrowest social range and placed them alongside the corresponding intelligence r's in Table XXXIV. Both sets of r's have also been corrected for chance errors.

If we now compare the corrected r's for intelligence and deception, we can see at once that the correlation between siblings in deception is in each case except the first larger than the correlation between the same siblings in intelligence. Indeed, referring once more to Table XXXIII, the deception r's, even when freed from the factor of intelligence, are still comparable to the intelli-

---

* It is of some importance that liars have been found to be "more suggestible, more imaginative, less steady in motor control involving an emotional disturbance." See the study in untruthfulness by Slaght, *University of Iowa Studies in Character Education*, No. 4, referred to by E. D. Starbuck, *Religious Education*, January, 1927.

† Hildreth, G. H., "The Resemblance of Siblings in Intelligence and Achievement," *Teachers College Contributions to Education*, No. 186, 1925.

TABLE XXXIV

COEFFICIENTS OF CORRELATION BETWEEN SIBLINGS IN DECEPTION AND INTELLIGENCE, CORRECTED FOR ATTENUATION

Population	Deception			Intelligence	
	Behavior	Raw r	Corrected r	Raw r	Corrected r
A, L, M, F to J	Speed	.225	.256	.289	.305
A, B	IER school	.440	.510	.350	.369
L, M, F to J, E	Coördination	.400	.470	.289	.305
Theoretical	All tests	.470	.495		
Orphans D	Speed	.300	.341	.118	.125
Orphans K	IER school	.333	.387	.221	.231
Orphans D	Coördination	.300	.353	.118	.125
Theoretical	All tests	.370	.390		

gence *r*'s. Furthermore (comparing the top and bottom halves of Table XXXIV), when the home background is restricted, as it is in the case of the orphans, the deception *r*'s do not shrink any more than do those for intelligence. These facts may be interpreted as meaning that the tendency to deceive is conditioned by nature and nurture in about the same proportion as is general intelligence.

SUMMARY

Seven hundred thirty-four pairs of siblings scattered among seven school populations were measured with four different types of deception tests. The general socio-economic level of the homes was measured in two populations by a scale made for this purpose and by the careful estimates of a trained school visitor in one population. Two populations were orphans from one of the communities already measured. The range for the other two populations was estimated.

These siblings were found to resemble one another in deception whether the opportunity to cheat was offered at home or at school.

The resemblance in deception on the test taken at home was shown to be due chiefly to collusion. To account for the resemblance in deception on tests taken in school, when collusion was impossible, three theories were proposed, *viz.*, (1) the influence of environment, through which siblings develop the same standards and habits of school behavior; (2) resemblance in intelligence; and (3) the presence of a common hereditary factor or group of factors in children of the same parents showing itself in similar deceptive behavior. These theories are not mutually contradictory.

The data assembled show clearly that the coarser differences among homes in socio-economic status, although associated somewhat with differences in deception, do not fully account for likenesses between siblings. So far as the home training is responsible for the resemblances observed, it must be due to subtle factors not incorporated in our measures of cultural level. Furthermore, since orphan siblings show resemblances which cannot be attributed to present home background, what home influence, if any, is at work in their case must have been exercised in very early childhood.

Resemblance in intelligence is equally inadequate as an explanation of the correlation of siblings in deceptiveness.

A biological factor is thus suggested as a possibility which is made the more plausible in view of the fact that the resemblance of siblings in deception is about the same as their resemblance in intelligence, and shows as much stability amid home backgrounds of varying range as does resemblance in intelligence. Whatever arguments are adduced for or against the biological causation of sibling resemblance in intelligence are applicable also to the interpretation of sibling resemblance in deception.

CHAPTER XI

RACE, NATIONALITY, AND RELIGION IN RELATION TO DECEPTION

The cultural factors we have so far discussed have centered chiefly in the economic status, conditions of living, and cultural history of the home. Any causal association between these factors and the deceptiveness of children is presumably mediated by the members of the family. Whatever cultural influences may be tied up with the father's occupation, however, are in part at least an exception to this rule. There are, of course, economic limitations, and consequent cultural limitations, which are inevitable accompaniments of certain types of occupation; and to the extent that such factors are associated with the tendency to deceive, the children of fathers belonging to one level of occupation will resemble one another more than they resemble those whose fathers are differently situated. But in addition to these influences, which, though common, are nevertheless mediated by the parents, there are the traditions, codes, social contacts and outlook, standards of dress and of success, and general access to the community as a whole which are the direct consequence of being the son of a plumber rather than the son of a street cleaner, of a college professor rather than of a truck driver. Occupation impinges on the child, creating his attitudes and tastes and ideals not only by what the father says about it but, and perhaps chiefly, by what the father's friends of the same occupation say about it, what the neighbors who belong to the same general occupational level say about it, what the teacher, the employer or employee, the storekeeper, the bank teller, the newspaper, the motion pictures say about it, all of which come into direct touch with the children. It is not surprising that the children of one level of occupation are somewhat alike in their behavior.

In a similar way, the cultural influences associated with nationality, race, and religion operate directly upon the child as well as through the medium of the family. A homogeneous social milieu characteristic of some European country is transplanted along with the families who emigrate and establish communities elsewhere. The church, club, newspaper, books, neighborly gossip, and association of children all tend to keep alive the old codes and attitudes, and the new ways of meeting the strange social problems of the new country naturally grow up as community modes of adjustment. It is to be expected, therefore, that even over a wide range of social or occupational level the families of one race or nationality or religion would in certain modes of behavior resemble one another more than they resemble the families of other cultural groups.

In addition to the common cultural heritage of the homogeneous group, there is of course the possibility of biological differences which might be of such a nature as to influence either the strength of the tendency to deceive others or to inhibit the tendency once aroused. To separate such factors from the social experiences associated with the contact of one race, culture, or religion with another is not possible with the data available. Only three, or at most four, distinct racial groups are represented, and these are by no means unmixed, *viz.*, a Nordic group, two Mediterranean groups, and a group of Negroes. In the case of the latter the fact of race is intermingled with a history of social oppression; with the Nordic groups, with a history of relative independence and freedom; with one Mediterranean group there is associated a long history of illiteracy and superstition; and with the other an equally long story of oppression and cultural pride. Nevertheless, certain differences are found which cannot be attributed to chance, whatever may be the real cause; and these we shall now report, dealing first with race and nationality and second with religion.

RACE, NATIONALITY, AND DECEPTION

For a comparison of races and nationalities with respect to deceptiveness we have available the records of two populations, A, a suburban community of wide social range, and C, a city school in a relatively favored section. These groups had been given the IER school and home tests, which, as the reader will recall, furnish us with an excellent measure of intelligence as well as of deception.

It is the custom in many towns for the members of one racial group to form an almost segregated community, the members of which are all on about the same socio-economic level and are rather homogeneous with respect to intelligence and culture. In view of the fact, already discussed in detail, that both intelligence and cultural level are associated with degrees of honesty, it is apparent that no comparisons can give a correct picture of the relation between race or nationality and deceit unless they are based on truly representative groups or on groups from the same general level of intelligence and culture. If, for example, we compare the median deception scores of children of German parentage with the deception scores of a group of Italian parentage and find that the German group is far less deceptive than the Italian, this does not mean at all that the Italian nation is less honest than the German nation. A little investigation is likely to uncover the fact that in such an instance as we have used for illustration the Italians are all day laborers from the lower Italian classes with a low mean intelligence, whereas the Germans are well-to-do, middle-class people of relatively high intelligence. Under such circumstances we could not expect any other results than those just hypothesized, and the evidence is by no means to be understood as indicating the true state of affairs in Italy and Germany.

Unfortunately, we are exactly in this position with much of our data on account of the fact that in population A the Italians, Negroes, Jews, and Slavs are in one section of the community, are selected from lower intelligence levels, and except for the Jews are largely in the fourth occupational group. This difficulty is somewhat corrected at school C, where all groups but the British move up in general intelligence and almost all move up in occupational level. We shall present first the facts concerning occupation and intelligence and then the facts relating to deception.

The occupational differences are shown in Table XXXV. The way in which national groups have been combined is of course debatable, but we intend no hard and fast classifications. The figures of the table are percentages of the total representation of each racial or national group, and the occupational score, given in the last column, is simply a rough summary of these percentages in terms of a score on an imaginary scale of 100. Thus the fathers of 72% of the Scandinavian group in population A, of whom there were 28 in all, were in small business or followed a trade, whereas in population C 94% (all but one of the 16) were on this occupational level. The Jews are the only group to show a radical change in status, rising from a score of 60 to one of 90.

TABLE XXXV

Occupational Status of Racial and National Groups in Populations A and C

Race or Nationality	Number		Big Business, Professional		Small Business, Trades		Unskilled Labor		Occupational Score	
	A	C	A*	C*	A*	C*	A*	C*	A	C
American	228	121	30%	40%	63%	59%	7%	1%	70	80
German	51	63	12	29	74	68	14	3	60	70
British	47	50	11	16	72	74	17	10	60	60
Jewish	63	154	5	51	86	49	9	0	60	90
Scandinavian	28	16	3	6	72	94	25	0	50	60
Italian	90	16	1	0	53	75	46	25	30	40
Negro	109		3		44		53		20	
French		12		42		58		0		80

* The figures are percentages of the total racial or national group falling at each occupational level.

The CAVI intelligence scores, which are given in Table XXXVI, show that most of the city groups have higher scores than the suburban groups, and that the most conspicuous differences are

TABLE XXXVI

MEDIAN CAVI INTELLIGENCE SCORES OF RACIAL AND NATIONAL GROUPS, POPULATIONS A AND C

Race or Nationality	School A		School C	
	N	CAVI	N	CAVI
American	250	105	113	105
British	49	104	51	99
French	10	102	12	115
German and Austrian	52	102	67	106
Scandinavian	28	101	16	105
Slavic	31	94		
Jewish	63	91	183	107
Negro	100	86		
Italian	79	84	18	93

found among the Jews and the small group of French. For the Jews, this change corresponds to the difference in occupational status.

The extent to which intelligence is likely to account for differences among racial and national groups is suggested by the correlation of −.72 between the median deception scores of eight of the groups of Table XXXV and their mean intelligence scores, showing definitely that the more honest groups are at the same time the more intelligent. We can make due allowance for such differences in intelligence by using the method by which we equalized occupational groups in Chapter IX. All that is required is that we first find the median intelligence score of each group and then find the median deception score of *all cases* having an intelligence score equal to this median of the racial or national group. Thus, for the American group of population A, we find a median Xi score of −1.9 and a median CAVI score of 105. We then examine the scattergram on which we have correlated the CAVI scores of population A with the Xi scores and find the Xi scores of those whose CAVI score is 105 or a little more or a little less. We find that the median Xi score of those whose CAVI scores are about 105 is −1.9. Hence we might properly predict that any group having a median CAVI score of 105 in this population would, if other things were equal, have a median Xi score of about −1.9. The American group, whose median CAVI score is 105, has a median Xi score of −1.9, which is the same as would be expected from their intelligence median. Similarly for the other groups we can figure how much more or less honest they are than might be expected from their median intelligence. Thus the factor of intelligence is in a sense equalized, and any difference above or below the expected Xi score needs to be accounted for by reference to some other factor than intelligence.*

Figure 46 sums up these comparative facts for our two populations, giving the amount in which each racial or national group either exceeds or falls short of the deception score that might have been expected from an unselected group having its median intelligence.

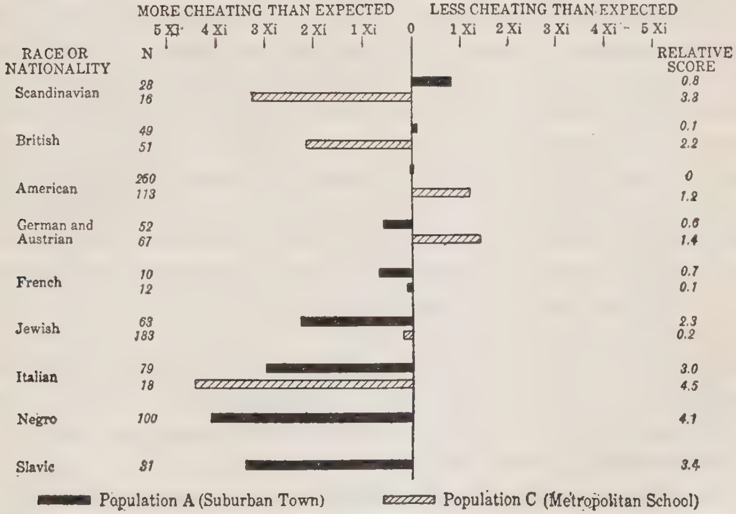


FIGURE 46

Comparison of Nationalities and Races in Respect to Intelligence and IER School Xi

* Complete data appear in Book Two, Chapter IX, Table CXXVIII.

It is interesting to note the marked difference in the relative deceptiveness of the suburban and city groups which are of Scandinavian or British origin. In community A each of these national types cheats somewhat less than might be expected from its intelligence level, but in the city community each of them cheats far more than might be expected.

Other comparisons may be discovered by studying the occupational scores of Table XXXV. We note, for example, that the three groups showing the largest relative deceptiveness in population C, *viz.*, the British, Scandinavian, and Italian, are also most largely represented among the lower occupational levels at this school. The same is true of the Negroes and Italians of population A. One might conclude forthwith that these national and racial differences were simply a matter of cultural level, and that groups having the same intelligence and social status would exhibit about the same tendency to deceive in school, no matter what their race or national background — and this is no doubt largely true. But in two instances the facts in the case of school cheating do not bear out this generalization. The Jews, who have the highest occupational score in population C and higher than the average in population A, nevertheless appear more deceptive than one would expect from their level of intelligence. We saw in Chapter IX that in general the high socio-economic status goes with less tendency to cheat in school. The other instance is the Scandinavians in population A, who come from lower occupational groups than the Americans, Germans, British, or Jews, yet who cheat in that community far less than might be expected from their intelligence. In the case of these two groups in these particular communities it is evident that something in addition to either intelligence or general cultural level is influencing the children's conduct on the school tests.

Since Figure 46 contains facts drawn from only one type of deceptive behavior, it is important to present what data we have on a wider selection of tests. Part of the school-C population had from nine to fourteen classroom cheating tests, three party tests, four athletic contest tests, and a stealing test. We have computed the medians of the per cents which each child cheated in his total opportunities. These for the different nationalities are as follows: The Americans cheated on the average once in every three opportunities; the British once in every three; the Jewish once in every four; the other nationalities once in about every three. Thus when all classroom cheating tests are combined, the Jewish children tend to cheat less than any other race. But at school C the median score of these same children on the Sims home background test is 14.0, whereas the score for the Americans is 12.00 and for the other races somewhat less.

Another bit of evidence showing that apparent race differences may be chiefly matters of socio-economic level, intelligence, etc., is the fact that the children of school D, with an average IQ of 96 and all coming from broken homes, cheat once in every two opportunities. These children are all Jewish. Thus on the Jewish race alone we have these facts: from school D, low IQ, broken homes, cheating once in every two times; from school C, high IQ, good homes (four points above the Sims mean), cheating once in every four times; from school P, still higher IQ, still better homes, cheating once in every five opportunities. It may be of some interest to know that in the case of ten boys who took money on the money tests at school C, two were Italian, two Greek, two German, two English, one American, and one Jewish.

With these somewhat indeterminate conclusions before us, let us turn now to the relation of religious differences to the tendency to deceive and see whether we may fare any better.

RELIGIOUS AFFILIATION AND DECEPTION

One question on the Pupil Data Sheet reads, "What do you do on Sundays?" When this questionnaire was administered in schools A and B, the examiners requested the pupils who attended church or Sunday school to put down the name of the denomination or the name of the particular church. In this way we secured information concerning religious affiliations; this was supplemented in population A by facts secured through the school system. What we have to say concerning the relation between religion and deception refers, therefore, only to these two communities, one of which, A, it will be remembered, is a small suburb, and the other, B, a mid-western city of some 200,000. The tests on the basis of which comparison is made are the IER school tests.

Figure 47 is made in exactly the same way as was Figure 46 in the section on race and nationality. There are in some cases wide differences between the denominations with respect to intelligence as well as social level, and it is necessary to equalize the intelligence factor as far as possible. We have done this by predicting the median school Xi to be expected from groups having the median intelligence scores of the several religious groups. The difference between this predicted Xi score and the median Xi score actually found is a measure of deceptiveness which is independent of the factor of intelligence. Let us turn, then, to Figure 47.

The figures inserted after the names of the denominations are in this case not the number of children but their median CAVI intelligence score. There is considerable difference between the two communities in general intelligence, but this is due chiefly to the fact that grades nine and ten are included in the scores of population B, but population A goes only through the eighth grade.

These differences between groups are allowed for in the chart, which shows the relation of the amount of cheating actually found to what might be expected from a group of unselected children all having an intelligence score equal to the median of the religious group. The somewhat conspicuous groups are the Baptist, Episcopalian, Jewish, Methodist, and Roman Catholic. Of these only the Baptists show more cheating than might be expected from their intelligence in *both* communities, and we know that in population A this is without doubt largely, if not wholly, a matter of social selection.* We are unable, however, to account for the situation of the Baptists in population B, for there is not the same factor of social and racial selection at work there as in A. The Jews, of course, are the same group as has already been discussed in the section on race and nationality and offer no new problems here.

---

* In A the Baptists all belong to one church, which ministers to a single racial group found almost exclusively in the congested quarter of the town and mostly attending one school.

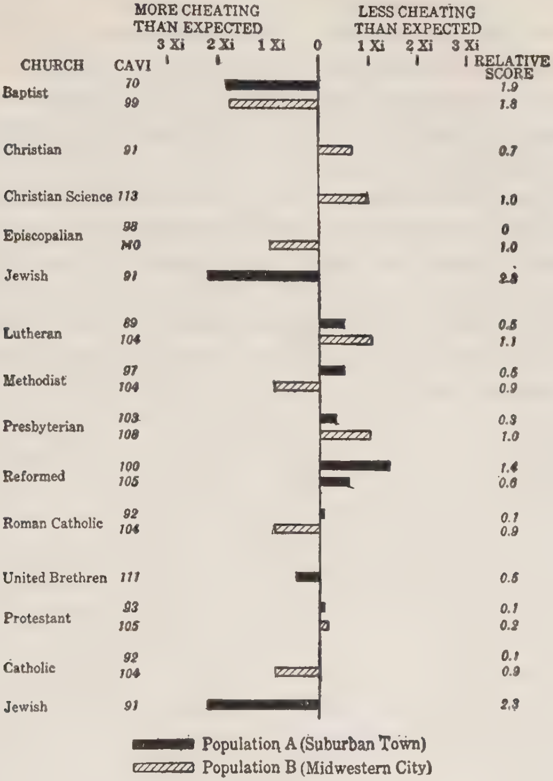


FIGURE 47 *

Comparison of Denominations with Respect to Intelligence and IER School Xi

SUMMARY

Complete tables supporting the charts of this chapter will be found in Book Two, Chapter IX, and should be referred to for critical study. The facts reported indicate that the differences among

---

* For actual figures, see Book Two, Chapter IX.

racial, national, and religious groups with regard to deceptive behavior in the classroom are not wholly accounted for by differences between these groups in either intelligence or general social status We have no means of knowing whether the differences remaining after allowance has been made for intelligence and home background are attributable to biological differences or cultural differences of the sort mentioned at the beginning of the chapter, but we are inclined to believe that the essential factor is the interaction of fairly homogeneous social groups with the community in which they are gradually gaining a foothold — an interaction which is often colored by excessive ambition on the one side and by exclusiveness or oppression on the other. Nor should one fail to consider the possibility of different ethical standards, particularly when the national and religious groupings are identical and thus reinforce one another.

CHAPTER XII

SCHOOL STATUS AND SCHOOL HONOR

It would be natural to presume that a child's status in the school system would have some relation to the development or loss of classroom honor. If his marks are low, does this influence him to take unfair advantage of an opportunity to raise them? If he has fallen behind in the race and is much older than his fellow pupils or if he is much duller than they or is younger and brighter, does such a displacement in grade increase the tendency to deceive? Are the children who are so well adjusted to what their teachers expect of them as to receive high marks in deportment also consistently honest in their dealings with the school authorities, or is their good behavior only a cloak for surreptitious forays on the teacher's credulity or good opinion? Do children get more honest or more dishonest as they advance from grade to grade? Our discussion of these questions is far less complete than their importance demands, but such data as we have will be of interest to those who are concerned with the relation of the schools to character and will open the way to our discussion in Part III of the relation between honor and morale, progressive methods, teacher influence, and definite efforts to teach honesty.

SCHOOL GRADE AND DECEPTION

From our study of the relation of chronological age to deception it may properly be inferred that as pupils advance from grade to grade they do not, on the whole, show any corresponding change in their tendency to deceive. Since children of many ages, however, are to be found in any school grade and as they progress at different rates, it seemed wise to consider the problem of grade independently. As our records cover only grades five to eight (in some cases reaching down to four and in some cases going as far as twelve), we are not in a position to say whether cheating begins to show itself in the kindergarten or in grade one, two, or three. Judging from what little work we have done in grade three, there is a process of experimentation going on there, similar to that of the still younger child in the home, in which the teacher and pupil are, so to speak, maneuvering for position and trying one another out. Practices which later come to be clearly defined as deceptive are appearing, partly because of misunderstanding of the teacher's directions and partly in a kind of struggle for existence; but it is probable that in most cases these acts, which seem to adults to be unfair, are not at first regarded in that light by the pupils but are rather taken for granted without moral reflection. There are some children, of course, who never cheat, either because it does not occur to them to do so or because the acts involved are distasteful to them for some reason, such as the fact that they are disapproved by their teacher or parents or because they are recognized by the children as unfair. On the other hand, there seem to be children who cheat whenever circumstances make it convenient, without giving the matter a second thought.

Whatever may be the origin of the behavior in any given case, by grade five the practice seems to be fairly well established and does not change materially through grade eight or, so far as our data go, through grade twelve. In Chapter VIII of Book Two will be found a complete table of correlation coefficients between grade and cheating for all kinds of deception tested and for all populations. These average approximately zero, ranging from $-.360$ to $+.272$. The larger *r*'s are gathered in Table XXXVII.*

The amount of these differences may be more graphically shown in Figure 48, which gives the median Xi's of successive grades in the case of the IER school test for populations A and P.

The contrast between the two populations is quite evident. In population A all the tests show a negative *r* with grade, indicating that the higher-grade children are more honest than the lower.

---

* Descriptions of populations may be found in Chapter IV.

TABLE XXXVII

CORRELATIONS BETWEEN GRADE AND DECEPTION

TEST	A	D	F TO J	K	P	S	R
IER school	− .329			− .263	+ .272	+ .230	
IER home	− .228		+ .243				
Speed	− .338	− .360	+ .239				
Puzzle		+ .256					+ .212
Lying	− .310						

But in this system, it will be recalled, we have a wide range of social level, with the lower social and intelligence groups concentrated in a single elementary school. Consequently, the lower grades are overweighted with a selected population which has larger cheating scores, grade for grade, than the rest of the system. In P, on the other hand, although the Speed tests show no grade differences (and are therefore not reported in Table XXXVII), the IER test scores get larger as we go from the fifth to the eighth grade.

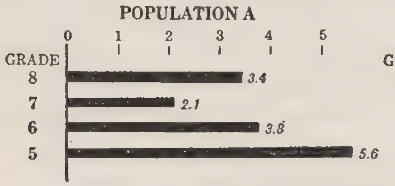


FIGURE 48

SCHOOL DIFFERENCES IN RELATION OF GRADE TO DECEPTION, IER SCHOOL Xi

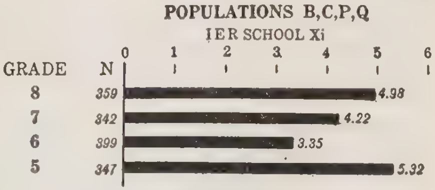


FIGURE 49

MEAN IER SCHOOL Xi BY GRADE

Figures 49 and 50 depict the grade norms on the IER school tests and the Speed tests for several populations. The Speed test means rise consistently and are accounted for, as previously explained, by a corresponding rise in the *ability* to cheat. But the IER tests show genuine grade differences. Grade five is the most deceptive, but grade six is the least deceptive, and from these through grade eight there is a steady increase. There is only one chance in ten that these grade differences are accidental, and the difference between grade five and the other grades is far beyond the limits of chance.

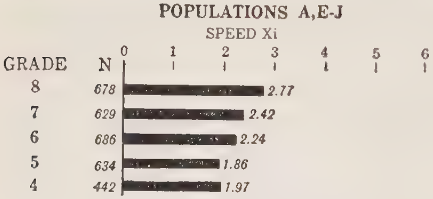


FIGURE 50

Mean Speed Xi by Grade

We can only conclude that, with respect to some forms of deception, the school system as a whole does not produce any changes in the tendency to deceive, but that on other forms, particularly in the case of the IER school tests, schools such as B, C, P, and Q show a strong tendency for deception to increase above the fifth grade, with the fifth grade appearing more deceptive than the rest in some cases and about the same as the sixth in others.*

RETARDATION AND DECEPTION

We have already called to mind the well-known fact that in any one grade there are children of widely different ages. The fifth-grade ages will range from eight to thirteen, the sixth grade from nine to fourteen, and so on. In some schools the range is wider and in others it is narrower. Theoretically the age for entering grade one is six, grade two seven, and so on up; but of course all children who enter grade one are not exactly six years old, and there are, furthermore, many delays in the general movement upward. Consequently the actual norm is much higher than the theoretical norm. McCall estimates the mean age of fifth-, sixth-, seventh-, and eighth-grade children to be, in the month of May, respectively, 11 years and 9 months, 12 and 10, 13 and 11, and 15 years.* Our own medians run about three months lower in general, so that we take the period from 11 years to 11 years and 11 months as normal for grade five. If a child is in this year in the

---

* The influence of schooling as a whole should not be confused with the influence of a single school, as our transient populations move so frequently that in many schools there is a large turnover of pupils from year to year and hence less opportunity to influence any of them for good or for evil than if the children remained for many years in one place. This matter is taken up in Chapter XV, where we report that length of attendance at any one school is, so far as our data show, almost entirely unrelated to the tendency to deceive.

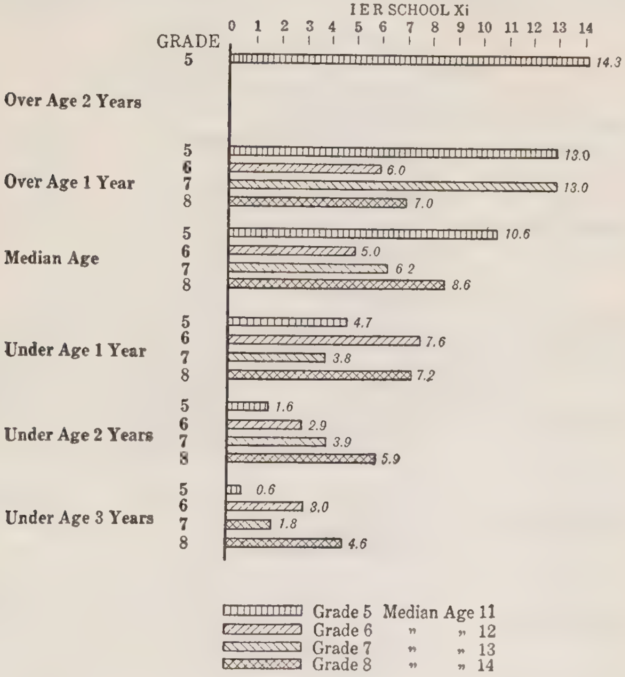


FIGURE 51

IER School Xi and Retardation, Population C

$r_{ac.g} = + .355$

---

* McCall, W. A., *How to Measure in Education*, p. 34, The Macmillan Company, 1922.

sixth grade, he is one year advanced or accelerated; but if he is anywhere from 11 years to 11 years and 11 months old when in grade four, he is one year retarded.

Child-guidance clinics frequently report poor grading, that is, acceleration or retardation, as a factor in the promotion of delinquency. Is it also a factor in deceit? Before presenting the facts, let us keep in mind that the older children are, in any grade, those who have been kept back, and that the usual cause of retardation is incapacity or relatively less intelligence than the rest of the group of the same age. In view of the fact that the less intelligent tend to be the less honest, we might expect, therefore, that the

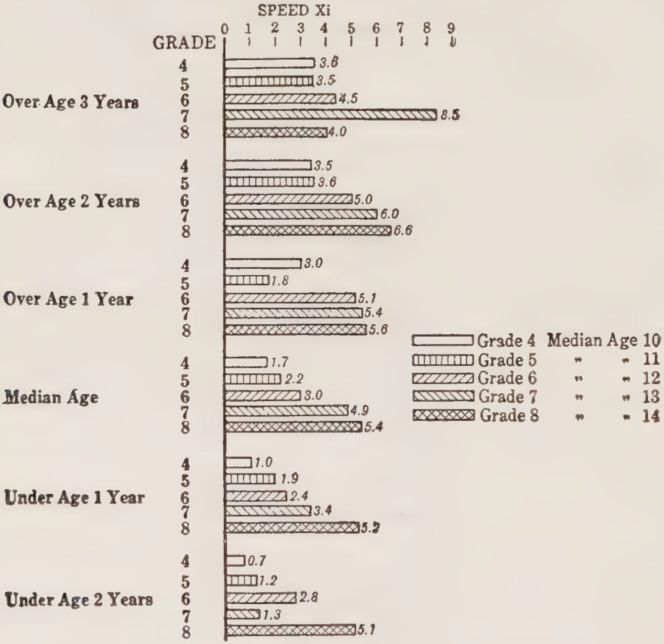


FIGURE 52

Speed Xi and Retardation, Population F to J

$r_{ac.g} = + .328$

over-age, who are also the less intelligent, would be in general less honest. We have determined the median deception scores in each type of test for each age level of each grade and each population and find results of which Figures 51, 52, 53, and 54 are typical illustrations. In each case the length of the band represents the median amount of cheating. The IER school and home tests and the Speed and Coördination tests are represented.

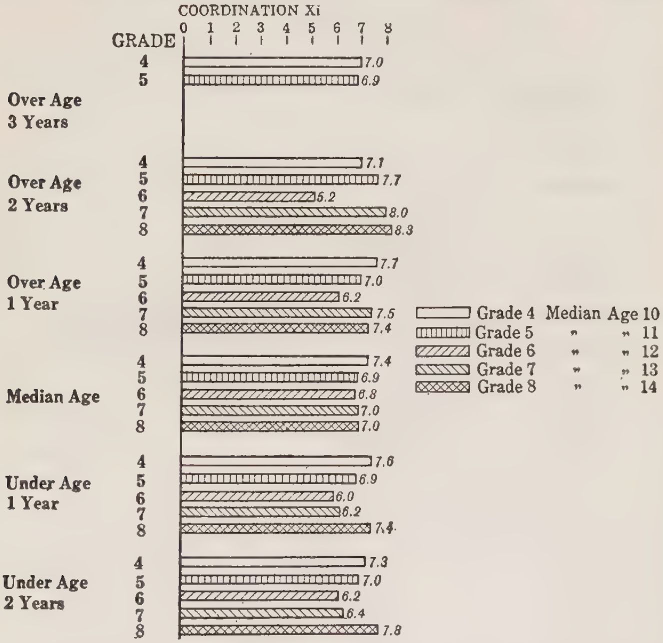


FIGURE 53

Coördination Xi and Retardation, Population F to J

$r_{ac.g} = + .160$

From these figures, which, as has been said, are typical of what is generally found, it may be seen that there is a tendency for the older pupils of each grade to cheat more on the IER school tests and Speed tests, but not on the Coördination and IER home tests.

In other words, if we take one grade at a time instead of putting all grades together as we did in our discussion of age and deception, we find that there is a positive correlation between age and deception in two types of test and a zero or sometimes even negative correlation in the other two. A more condensed way of expressing this relation is the partial correlation coefficient between age and deception with grade kept constant ($r_{ca.g}$) — a figure which gives us approximately the *average* of all the r's we would get if we correlated age and deception for each grade *separately*. This shows the effect of age within each grade. These partials are printed at the foot of each table.

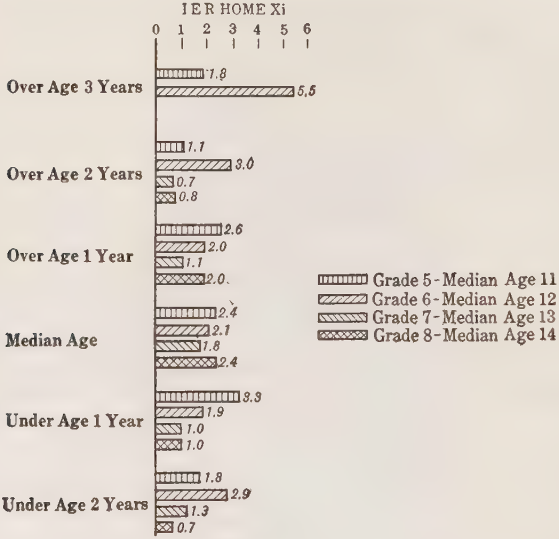


FIGURE 54

IER Home Xi and Retardation, Population A

$r_{ac.g} = -.111$

THE RELATION OF DECEPTION TO CLASSROOM DISPLACEMENT IN AGE AND INTELLIGENCE

The displacements with which we have been dealing so far in the discussion have been from the mean age of a large number of children in a great variety of classrooms, some of which were as a whole over-age and some of which were as a whole under-age. Consequently an individual child might deviate two years or more from the theoretical age norm for his grade and still be approximately at the age norm for his own classroom. As a matter of fact, in working out the deviations of over twelve hundred children from their own classroom norms in populations B and C we found only one child that deviated by more than a year from the median year of his own group. Such relatively small deviations could hardly be expected to affect the behavior of the over-age or under-age in comparison with their own groups as much as the far larger deviations from the general age norms which we have been discussing.

Dealing in months rather than years (since the deviations were small), we figured each child's deviation from the median age of his own class and then made a table for each room showing the number of those who did not cheat at all who fell in the median month, the number who were one month older than the median, the number two months older than the median, etc.; and then of those who cheated once we found the number whose age fell in the median month, in the next month, etc., working in both directions from the median. We did this for each room and then combined the results in one table for population B and another table for C. It is hardly worth while to print the tables, as no consistent relations between age displacement were discovered except that there was a noticeable tendency for a few individuals who were at either the over-age or under-age extreme to fall in the cheating rather than the non-cheating group. The facts are briefly summarized in Table XXXVIII.

Table XXXVIII reads as follows: 39% of those who were below the median age of their own classroom cheated on the school test and 61% did not. But approximately the same proportion, *viz.*,

TABLE XXXVIII

AGE DISPLACEMENT AND DECEPTION, SHOWING PER CENT CHEATING AND PER CENT NOT CHEATING AT SCHOOL AND AT SCHOOL AND HOME

	SCHOOL B				SCHOOL C			
	School		School and Home		School		School and Home	
	C	H	C	H	C	H	C	H
Per cent below median	39	61	62	38	60	40	76	24
Per cent above median	40	60	59	41	60	40	73	27

40% of those who were above their class median in age cheated on this test. In neither school does this coarse comparison show any general relation between cheating and over-age or under-age so far as the classroom is concerned. As the pupils are usually classified according to intelligence, the implication is that it is not just being over-age for one's grade that matters so much as being both older and duller and therefore with an older and duller group.

When we handle the deviations from the class median in CAVI score, we find that the facts correspond to those we have already reported for grade displacement. In Table XXXIX we have given the percentage cheating at each level of deviation.

From Table XXXIX one may read that in school B out of 110 children who deviated from 20 to 30 points on the CAVI test below the median score of their classroom, 52% cheated in school and 69% in either the school or home test, and so on. If the reader will run his eye up the columns of percentages, he will observe a tendency for the figures to increase as the eye ascends the columns. Since the intelligence deviations above the middle line are deviations in the direction of lower scores or lower intelligence, it can be seen that when one classroom at a time is considered there is in these two populations a *negative* correlation with CAVI score — the children whose mental ages are above the average for the class in which they do their work tend to cheat a little less frequently than those whose mental ages are lower than the average for their group.

TABLE XXXIX

Intelligence Displacement and Deception, Showing Per Cent Cheating on the School Tests and on School and Home Tests Combined

		School B				School C			
		School		School and Home		School		School and Home	
	CAVI Deviations	N	Per Cent	Per Cent		N	Per Cent	Per Cent	
Lower scores	60	1	0	100					
	50	2	50	100					
	40	16	50	75		1	100	100	
	30	49	67	80	66%	16	94	94	79%
	20	110	52	69		75	60	79	
	10	144	51	74		110	66	79	
	0	197	36	57		132	63	80	
Higher scores	10	134	36	56		96	53	69	
	20	75	25	45		57	54	70	
	30	50	30	48	54%	30	50	63	69%
	40	21	24	43		10	30	40	
	50	16	31	50		10	40	40	
	60	6	33	33		1	0	0	
	70	1	0	0					

As the two schools B and C are quite similar in the way displacement affects cheating, we may combine them in Table XL, which shows the same facts in a somewhat different form. In this table we give the per cent of all the honest children who are above the median age and median intelligence score and the per cent who are below in each case. We also show the average deviation of both honest and dishonest cases above and below the median, and the standard deviation, which of course includes variation in both directions from the mean.

The standard deviations show the variability around the mean. The dishonest children are more variable in age — that is, are less well graded as to age — than the honest, but the honest children show the greater variability in intelligence. This variability of the honest children, however, is *less* than that of the dishonest children *below* the median and greater only above it. Furthermore, the median intelligence of the honest is above that of the dishonest (43% of them lying below the median for their class as compared with 58% of the dishonest for the school test). Thus, when we compare the children class by class we still find that the cheaters tend to be a little older and duller than the non-cheaters.

TABLE XL

Displacement in Age and Intelligence in Relation to Deception — IER Tests, School and Home

	Chronological Age					CAVI Intelligence				
	Below Median		Above Median		SD *	Below Median		Above Median		SD
	Per Cent	AD *	Per Cent	AD *		Per Cent	AD	Per Cent	AD	
School										
Honest	50	69	50	83	108	43	13.4	57	17.7	19.6
Dishonest	49	71	51	100	113	58	17.6	42	15.1	18.1
Home										
Honest	46	67	54	99	113	47	13.3	53	17.6	19.3
Dishonest	55	74	45	89	126	56	15.6	44	14.8	18.3
Total										
Honest	47	67	53	94	107	40	13.0	60	19.0	20.6
Dishonest	50	72	50	97	111	56	14.7	44	15.1	18.0

* The average and standard age deviations are expressed in days.

ATTENDANCE AND DECEPTION

Under compulsory school laws one might not expect to find much, if any, relation between attendance and cheating except possibly in the case of truants, who might be deceptive because of other environmental influences. Nevertheless we tabulated the data from school C, finding the correlation between percentage of attendance for a half year and cheating to be zero. We also found the percentage of attendance of those who did not cheat at all and of those who cheated once, twice, three times, and four times on the IER school and home tests. These percentages are shown in Table XLI.

TABLE XLI

Percentage of Attendance and Instances of Cheating, Population C

	Cheating Instances				
	0	1	2	3	4
Percentage of attendance	87	86	85	89	90
Number of cases . . .	118	195	110	48	13

SCHOOL ACHIEVEMENT AND DECEPTION

A child's status in school is a matter not only of grading and promotion but also of class standing and school marks. So far as our testing has gone, we have found evidence of a rather general school " drive " or eagerness to do well or at least to appear well in school work. We recognize of course that this drive varies greatly among schools and among pupils in the same school. Indeed, instances have been reported of boys being hazed for getting marks higher than they needed for passing. In many schools, however, there is not only keen competition among the pupils for academic recognition but also considerable pressure at home to maintain high marks.

Differences in incentive to do good work would, if other things were equal, constitute differences in incentive to cheat in order to secure higher grades. It is just here, however, that we might expect to find family differences or group differences, higher ambition being sometimes associated with higher standards of conduct and in other cases being dissociated from ethical considerations.

Furthermore, even when a strong school drive is operative it does not necessarily achieve its goal in high marks. While there is doubtless a positive correlation between drive and school achievement — possibly a higher correlation than between intelligence, apart from drive, and achievement — this association is not perfect by any means, and many a child who works hard is nevertheless disappointed in the results. Again, we might expect this child to be more susceptible to opportunities to deceive than his more successful classmates.

In view of the existence of so many rather conflicting factors leading to school achievement, we might anticipate a low correlation between marks and deception, and this is just what we find. In two schools we have only the teachers' marks as evidence of achievement. In one of these schools we have separated the scholastic from the non-scholastic grades, meaning by the latter music, drawing, and the manual arts. In a third school we have achievement quotients and educational quotients based on standard school tests. Since no relation between school achievement and deception is found, we will confine our report at this point to a table of correlation coefficients.

TABLE XLII

Correlation of Deception and School Achievement

	Population		
	A	B	C
Scholastic average and IER school Xi	− .200	− .155	
Scholastic average and IER home Xi	− .020	+ .180	
Non-scholastic average and school Xi		− .153	
Non-scholastic average and home Xi		+ .270	
AQ and school Xi			− .030
AQ and home Xi			− .090
AQ and CT ratio			+ .004
EQ and CT ratio			− .095

The achievement quotient is the ratio of educational age to mental age, and the educational quotient is the ratio of educational age to chronological age. But no matter how measured, whether by teachers' rather subjective ratings or by standardized school tests, the r's, though mostly negative, are so low that the slight association observed between higher marks and greater honesty might well be accounted for by the fact that those who get the higher marks are usually the more intelligent and, as we have seen, the less deceptive. Apparently those who get higher marks cheat just about as much as those who get lower marks. Are we to suppose that those with lower grades who also cheated did so to improve their standing, and that those with higher grades who also cheated did so to maintain it? If high marks are made as much by those who cheat as by those who do not and if there is a tendency for those with less intelligence both to cheat more and, other things being equal, to get lower marks than those with higher intelligence, it might properly be asked whether the high grades of those who cheat would be secured if they did not cheat in the course of their school work.*

SCHOOL DEPORTMENT AND DECEPTION

The final factor in school status with which we shall deal is the child's standing in the good opinion of his teachers, which is recorded by some kind of deportment mark. If we were interested at this moment in validating our tests of deception in terms of their capacity to predict character or even only certain forms of general behavior, teachers' deportment grades would be valuable material for a criterion. We have not considered our deception tests in this light, however, so that our interest in deportment grades takes another direction. We are concerned here with the problem of whether such maladjustment between the pupil and the teacher or the school system in general as is reflected in deportment marks may also be associated with the tendency to get the better of the authorities whenever possible, as, for example, by putting something over on them during a test. Deception under such circumstances becomes a symptom of maladjustment.

---

* That correlations reported between intelligence and school marks are not higher than they are may be due partly to the fact that the marks result in part from deception, whereas the scores on an intelligence test may have no deceptive element in them. Consequently, those whose grades have depended in part on deceit find themselves at a disadvantage when the practice of deception is entirely eliminated, and the two sets of scores, therefore, do not correspond as they theoretically should.

We found deportment marks everywhere, but we secured data on three schools only as we found that in some schools the marks were almost all A's and hence quite useless as measures.* In Figure 55 we report the relation of deportment to IER school and home cheating and the Speed tests, in the two schools having usable deportment grades.

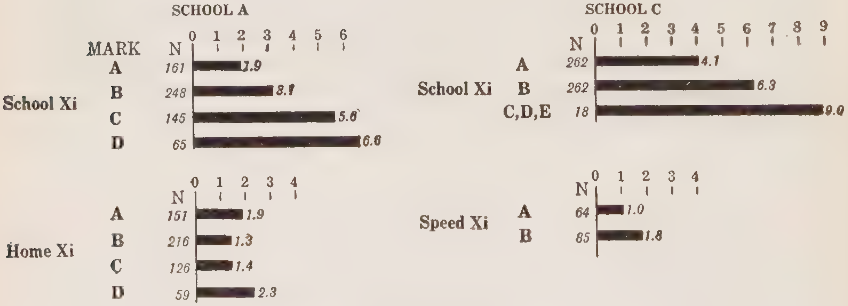


FIGURE 55

Deportment and Deception

Before discussing Figure 55 it would be well to supplement it with the correlations of Table XLIII.

TABLE XLIII

Correlation of Deportment and Deception

Test	School A	School C
School Xi	− .376 ± .05	− .287 ± .04
Home Xi	− .04	.00
Arithmetic Xi		− .505 ± .05
Speed Xi		− .375 ± .07

---

* In Book Two, Chapter VII, we discuss the teacher's ability to rate accurately such types of behavior as honesty.

The *r*'s of Table XLIII are biserial *r*'s, the populations being divided either between those marked A and B or between those marked A and B on one side and those marked C and D on the other. Although thus subject to considerable error, they indicate, in conjunction with the charts of Figure 55, that there is a definitely negative relation between high deportment marks and deception when the test is a matter of school routine, but that when the cheating takes place outside the school those who get high deportment marks are no less inclined to make surreptitious use of the dictionary than those who are marked low.

As far as the school behavior goes, however, we can be sure that the tests reveal deceptive tendencies which are associated with the type of maladjustment registered in deportment marks. Nor is this association due to intelligence, for the correlation between deportment and intelligence is only $-.183$. Both in the deportment grades and in the deception scores we find evidence of disturbances in the pupil-teacher or pupil-school relation, and these disturbances, when they exist, tend to be in some way associated.

SUMMARY

From our study of school status we may conclude that there is nothing in the general academic situation of grades four to eight which favors cheating *in general* more than it prevents or overcomes it. On some tests, however, such as the IER material, there is a strong tendency for cheating to become more prevalent in the upper grades. Retardation is associated with more cheating, but this seems to be because retardation is associated with less intelligence. There is no correlation between teachers' marks and the tendency to deceive, which indicates probably that the less intelligent, as a group, make up somewhat for their deficiencies by occasional cheating. Those who receive lower deportment ratings, partly because they tend to be the less intelligent, are more deceptive than those whom the teachers regard as well behaved.

CHAPTER XIII

MISCELLANEOUS FACTS ASSOCIATED WITH DECEPTION

Various matters on which we have information but which do not classify in the chapters that have preceded are brought together here to conclude our presentation of factors associated with deceit. These are: association among friends and in the classroom; sociability, as measured by the frequency with which one is named by others as a personal friend or companion; suggestibility, as measured by the Otis * test; and frequency of attendance at motion pictures.

ASSOCIATION

Birds of a feather flock together. In human affairs, birds that flock together acquire similar plumage. On the Pupil Data Sheets which were used in populations A, B, and C we had the pupils name their best friends and those of their companions whom they liked best. There were few children who did not give at least three names and many gave five or six. In population A, about half of those named (who were in school at all) were in the same classroom and about half in different classrooms. In B almost all those named were in the same classroom. We were able to compare, therefore, the influence of class association with that of out-of-class association. In order that we might also compare the amount of sibling resemblance with resemblance between friends, we used for our comparisons only those who had at least one brother or sister among those we had tested. Taking these for our major cases,

---

* Otis, M., "A Study of Suggestibility in Children," Columbia University, *Archives of Psychology*, No. 70, 1924.

we correlated with the IER school Xi of each one of them the IER school Xi of each of his friends. The resulting *r*'s * are given in Table XLIV–A.

TABLE XLIV — A

RESEMBLANCE OF FRIENDS IN DECEPTION, IER SCHOOL Xi

		POPULATION A	POPULATION B
One friend with all friends	(1)	.486	.299
One friend with all friends, all cases from *one community*	(2)	.654	
One friend with all friends from his own classmates	(3)	.662	
One friend with all friends not in his class	(4)	.225	
One friend with one friend	(5)	.418	.160
One friend with one friend in classroom	(6)	.727	
One friend with one friend not in classroom	(7)	.159	
One friend with one classmate not a friend	(8)	.598	
One friend with several† classmates not friends	(9)	.572	

† As many as he had named as friends.

These strong positive correlations show that classmates tend to resemble one another in deception. A comparison of *r*'s (6) and (7) and (3) and (4) indicates that the significant factor in accounting for the resemblance of friends is classroom association, although there is a slight resemblance of friends who are not in the same room at school. That this is in part at least due to the resemblance of friends in intelligence is shown by the correlations of Table XLIV–B.

TABLE XLIV — B

RESEMBLANCE OF FRIENDS IN CAVI SCORE, POPULATION A

One friend with all friends	(10)	+ .349
One friend with one friend	(11)	+ .318

---

* Corrected for errors of type 1. See Book Two, Chapter VI.

A comparison of *r* (11) with *r* (5) and of (10) with (1) suggests the extent to which friends resemble one another in classroom deception more than in intelligence. Evidently intelligence plays a considerable part in the resemblance in deception.

Correlations (8) and (9) are interesting in view of the fact that one child is compared with one or more of his classmates not named by him as a friend but chosen at random from his class. These should be compared with *r*'s (3) and (6). This corroborates the statement just made that the mere fact of being in the same classroom is the significant cause of resemblance.

That the association of a child with other children who deceive is a large factor in accounting for his own deceptiveness seems to be clear, but this association apparently operates chiefly in connection with the classroom experience which the friends all share alike rather than in out-of-classroom relations. In Chapter XVII we shall return to this phenomenon of classroom resemblance.

SOCIABILITY

In filling out the Pupil Data Sheets there were few children who did not name at least three friends or companions and many named five or six. For the purposes of this study we confine ourselves to population A, a suburban town. Although no limitation was placed on the term " friend " or " companion," about

TABLE XLV

Comparison of Sociable and Unsociable Groups of One Hundred Each, Population A

	Intelligence	School Xi		Home Xi	
	Mean	Median	Mean	Median	Mean
Sociable group	95	3.1	3.5	1.7	2.6
Unsociable group . . .	97	3.8	3.3	1.8	2.7

three-fourths of the names were those of children in the grades tested. Some of these were mentioned many times by others and about two hundred were not named at all. We were able, therefore, to select two groups of a hundred each, one of which, the " sociable " group, received at least five mentions apiece, and the other of which, the " unsociable " group, received no mention at all. The comparative intelligence and deceptiveness of these two groups is shown in Table XLV.

The two groups are nearly alike; that is, the tendency to deceive has evidently no relation to the faculty of making friends.

SUGGESTIBILITY

In any activity which takes place in the presence and with the knowledge of others there is always a large factor of suggestion. The individual may be influenced to do as the others do without regard to their opinion, or he may be influenced by their opinion even when their behavior is in doubt. In the case of our deception tests that involve the use of answer sheets, there is the further factor of the suggestive presence of the key. The degree to which it is used by a child in the face of caution, the sense of honor, and similar inhibiting forces may be in direct proportion to the child's susceptibility to suggestions which come to him in this sort of way. We had no means of measuring the child's responsiveness to the acts or opinions of other children, but in the Otis test of suggestibility we found an instrument well calculated to throw light on suggestibility of the more direct sort represented in the presence of answer sheets.

The Otis test presents a variety of situations to which the subject is to respond by expressing a judgment or stating a logical or factual relationship. In each case the correct response must be found in the face of a more obvious incorrect answer which is suggested by the way in which the situation is presented. The following are illustrations:

16. Now I shall show you another card. This will look like a boy knocking at the door. (Expose card No. 16 for 5 seconds.) If you saw the boy, draw a line under the word

Yes after No. 16 on your paper. Indicate your answer in any case.

21. Write the answer to this question: Do acorns come from pine trees or from maples? (10 seconds)

25. You see here the letters A, B, C, D, E, F, G, H, I, J. If S comes before M in the alphabet, draw a line under the letter E. (Pause) When through with that, place a small dot under the letter A.

27–28. You see again the words *True* and *False* printed eight times. I am going to read again eight sentences as I did before. If the sentence I read is true, draw a line under *True;* but if it is not true, draw a line under *False.* Most of the sentences will be false. Now ready! Look at No. 1. Put your finger on No 1.

1. Fish walk on land.
2. The color of snow is black.
3. There are eight days in a week.
4. A desert has no rivers or lakes.
5. Stones break more easily than glass.
6. The automobile is a musical instrument.
7. Doctors are useful because they are kind men.
8. It is false that we can walk on water.

33. Here are three squares. Write a word in the middle square. If you cannot think of a word, you can write the word *tree* or *sun* or *pig*. (10 seconds)

There are twenty questions in all, five of them similar to No. 16, which directly suggests the answer. Inasmuch as a child might prefer agreeing with the teacher to giving his own opinion, these five may have in them a large factor of deception. But there are two questions similar to No. 21, four similar to No. 25, and five similar to Nos. 27–28. The latter acts by requiring a shift from a series of three like answers to an opposite answer on the theory that the more suggestible will fail to resist the tendency to keep on doing the same thing. There are also four questions of doubtful significance, similar to No. 33, which directly suggest the answer; but probably these are not complicated with deception.

On the other hand, our copying tests are similar to these so-called suggestibility tests in offering the child an obvious thing to do and then telling him not to do it. The mere presence of the answer sheets may be highly suggestive too.

In population A we had the opportunity of administering this test to 303 fifth- and sixth-grade children. Whether the range of scores on the suggestibility test is for this reason restricted is not known. If it is, then the degree of association of suggestibility scores with deception scores which we found is the more remarkable. We shall show this relation first in the form of a chart, as usual. It should be noted that the test is scored in such a way as to measure resistance to suggestion; the higher the score, the greater the resistance. Thus we may group our cases in levels of suggestibility score and portray the amount of deception exhibited at each level. The deception tests are the IER school test and IER home test, with the results reported as median Xi's and per cent cheating.

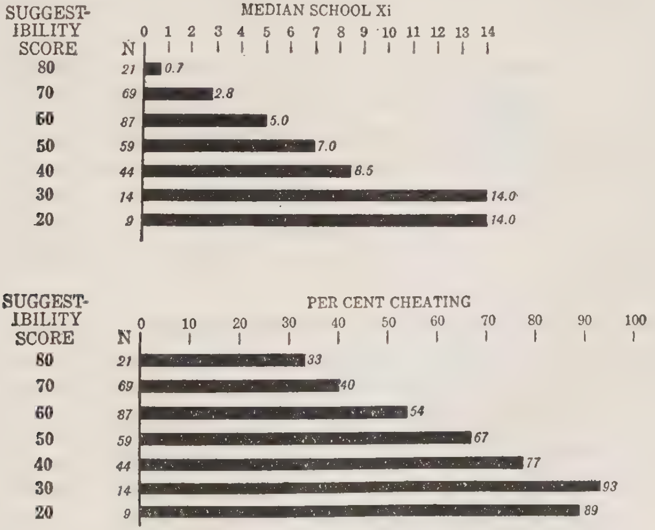


FIGURE 56

Suggestibility and Deception, Population A, Grades Five and Six

The relation of scores on the suggestibility test to school cheating, home cheating, and other significant facts is shown in a series of coefficients of correlation reported in Table XLVI.

TABLE XLVI

Correlation between Resistance to Suggestion and School Cheating, Home Cheating, Age, and Intelligence

r with school cheating	$-.60$
r with cheating at home	$-.10$
r with intelligence	$+.48$
r with chronological age	$-.05$

Partial r, intelligence constant, $-.499$; r, cheating and intelligence, $-.42$.

We may point out first that, although there is no relation between resistance to suggestion as measured by the Otis test and chronological age on our cases, her own records show an r of .66 with age, over an age range of 7 to 21. The r with intelligence, however, is $+.48$ on our cases. To some extent, therefore, the r between the suggestibility test scores and deception, which, as with intelligence, is negative, is due to the common factor of intelligence; but even if all the children tested had been of the same intelligence, the r between deception and the suggestibility scores would still have been as high as $-.49$. The picture of the facts in Figure 56 is consequently not far from the truth, even when intelligence is taken into consideration.

In view of the fact that the r between suggestibility and home cheating, which was presumably done in solitude and with no obtruding suggestion of method, is small, it would seem apparent that the surreptitious use of answer sheets in order to gain a bigger score than one is entitled to is in part at least a function of sensitiveness to suggestions of this sort as measured by a test which probably involves only a slight factor of deception.

ATTENDANCE AT MOTION PICTURES

We asked the pupils who had the Pupil Data Sheets several questions regarding motion pictures, such as the frequency with which they attended, the type of picture they liked best, and the names of pictures about which they had thought a good deal recently. The facts for populations C and A in relation to frequency of attendance and school cheating are summarized in Figure 57.

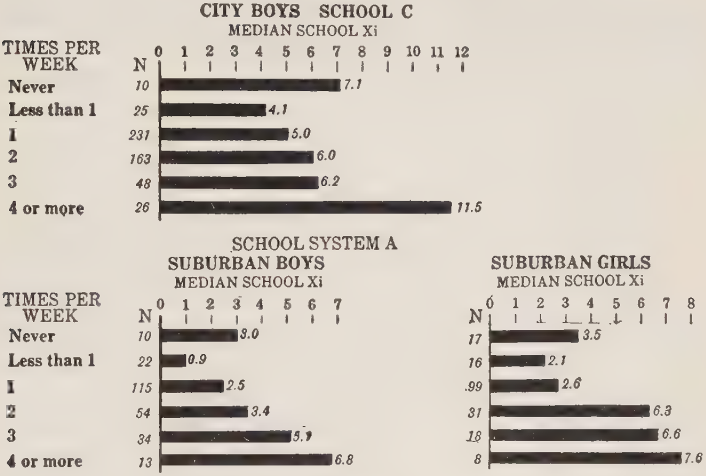


FIGURE 57

Attendance at Motion Pictures and Cheating on IER Tests

A glance at Figure 57 indicates the fact that frequency of attendance and deception are correlated. When A and C are combined, however, the *r* between attendance and school Xi is only +.167. There is great variability in the deceptiveness of each of the attendance groups. Nevertheless, the fact that all three of the populations show the same regular increase in the tendency to deceive as attendance rises is probably significant of a closer relation between the two facts than the size of the *r* would suggest. Those who say they never attend are an apparent exception in each case. Whether these belong to an exceptionally poor home background or are inclined to falsify the facts regarding themselves is not known.

Whatever relation there is between attendance at pictures and deceit may possibly be due to differences in intelligence or general economic-social level, although neither of these factors correlates with attendance as highly as does deception. It is not asserted that the pictures cause the deception. All that is demonstrated is an association between frequency of attendance and deception, which is more likely to be due to some third factor or group of factors with which each of these is connected.

CHAPTER XIV

A COMPARISON OF HONEST AND DISHONEST CHILDREN

Up to this point in our discussion we have dealt almost entirely with whole communities or with cross sections of communities which range all the way up and down the scale of deceit. By taking the extremes of such a scale and comparing the most honest with the most dishonest cases, certain general facts already reported will be made more conspicuous, and at the same time it will be possible to give more attention to individuals than has so far been done.

In order to select our cases, we resorted to the Pupil Data Sheets, on which the children had been asked point-blank whether or not they had cheated on the IER tests. For our most dishonest group we took those who not only certainly cheated but who also lied about doing so afterwards. For our honest cases we took those whose Xi scores ranged around zero and whose Pupil Data Sheets gave no evidence of concealment or duplicity. In addition, we picked out the pupils who not only cheated but who admitted it afterwards. These we called the "confessors." In order to keep as many factors constant as possible, we selected our cases so that they would be proportionally distributed among the grades and schools and between the sexes. This selection yielded us, for population A, approximately eighty honest (H) cases, ninety dishonest (D) cases, and thirty-five confessors (C). Although no attention was paid to occupation or religion in picking out our cases, the resulting HDC group was fairly representative of the whole community in these particulars. The proportion of each occupational level and of Catholics, Jews, and Protestants was about the same in the total HDC group as it was in the entire school population. These proportions are shown in Table XLVII.

TABLE XLVII

Social and Religious Constituency of the HDC Group

Per Cent in Each Occupational Level		Per Cent in Each Denomination	
Professional (I)	10	Catholic	30
Trade (II and III)	71	Jewish	14
Unskilled (IV)	19	Protestant	57

It was in school system A that our school visitor did her work, using the method of observation and report which is described in Chapter VIII. The cases assigned to her were the children of the HDC group. Of the HDC cases she was able to visit about one hundred and fifty, and the records of one hundred and twenty-eight of these are sufficiently complete for detailed comparison.

We shall report in the first place the pertinent available facts for each individual, classifying the cases in the three groups, most honest (Table XLVIII), most dishonest (Table XLIX), and confessors (Table L). Some explanation of the way in which the facts are reported in these tables will be necessary. The row of figures at the top consists of the identifying case numbers. Following the order of the tables, the other items are as follows:

I. Personal relations within the family

Parental example dishonest. Wherever evidence of such a fact appears, it is reported by a check mark under the case number.

Personality of father: (1) notoriously antisocial behavior; (2) occasional drinking sprees or sex irregularity; (3) lack of responsibility; (4) responsibility, exemplary character

Relations between parents: (1) complete antagonism, abuse, infidelity; (2) domination of one by the other; (3) occasional quarreling; (4) complete compatibility

Discipline. Four types of unsatisfactory treatment are listed, and wherever there is evidence of the presence of any of the four types the fact is indicated by a check mark.

Attitude of mother and of father toward the child: (1) grudging, antagonistic; (2) selfishly affectionate; (3) generous, sympathetic, but fostering infantilism, tending to repress; (4) generous but wise, developing child's affection and independence

Foreign language used. The fact is indicated by a check mark. " Presence of more favored child " means one who is brighter or more talented or otherwise superior.

Subject an only child. The fact is recorded.

Pressure on school work. Reference to overanxiety and nagging or urging on the part of parents or others in the family

II. Cultural status of family

Community rating. The town was geographically divided into sections and each section was rated according to the general physical conditions observed, such as congestion, size of houses, nearness to stores and amusements, play facilities, appearance of streets and grounds, probable rental value of the property. 12 is high and 1 is low.

Home background level. The visitor's records were grouped in fifteen classes or levels representing the general quality of the home. (See Chapter VIII.) 1 is high and 15 is low.

Burdick culture score. This is the score described in Chapter VIII, based on a test given in school several months after the children had been tested for deception, so that there are a good many records missing. The scores range from 12 to 109.

Nationality or race. The initials refer to race or to the country in which the parents were born, and have the following meanings:

A, United States
E, England
C, Czechoslovakia
F, Finland
Fr, France
G, Germany
H, Hebrew

Hu,	Hungary
I,	Italy
L,	Lithuania
N,	Negro
No,	Norway
P,	Poland
R,	Russia
S,	Sweden
Sc,	Scotland

Economic or social level rising or falling. Includes both the present generation and the previous generation where facts are available.

Ambition higher than attainment. Important, but evidence slight

Religion: Catholic, C; Jewish, J; and Protestant, P

III. Personal data

Sex: Boy, B; girl, G

Intelligence. The figure is the sigma deviation of the child's CAVI score from the mean of the children of his age, and is therefore above the mean (+) or below it (−).

Health. Only the fact of poor health, with a history of diseases or accidents, is reported.

Age-grade displacement. Assuming that the normal age for entering the first half of grade five is ten and allowing for the time when the tests were given, any deviation in age from the expected age is expressed in half-years, with a plus sign meaning over-age and a minus sign meaning under-age. Thus, −4 means that the child is two years younger than the assumed normal age for his grade. Less than a half-year deviation is ignored. The median of the entire HDC group thus figured is zero, 38% deviating less than a half-year from the assumed norm.

School deportment. The actual grade as reported by the school is given.

Cheating in classroom. As the children are distributed in some twenty classrooms, it is important to know the relative deceptiveness of these rooms in relation to the child's own tendency to deceive. The facts are expressed as group ratings corresponding roughly to the per cent cheating in each class. Thus where the cheating was ten per cent or less, the rating is 1; where twenty to thirty per cent cheated, the rating is 2. In the classes cheating ninety per cent or over, there was a wide difference in mean Xi scores, so that the groups which would have been rated 9 could be distributed from 9 to 14 by taking their mean Xi scores also into consideration.

Maladjustment index. This is the figure described in Chapter VII, based on the Woodworth questions and certain other facts, such as frequency of punishment, fears, and number of teachers disliked. The larger the figure, the greater is the evidence of emotional maladjustment.

For convenience of study the facts are grouped in three classes: (I) personal relations within the family; (II) the general cultural position of the family; and (III) facts about the child, including the temptation to which he is exposed in the deceptive behavior of his classmates. The items were first selected for consideration before the results of our study were known to us, because it was thought that they might bear some relation to the tendency to deceive, either directly or in combination with other facts. It would be reasonable to suppose, for example, that a retarded child with relatively low intelligence might be persuaded to cheat in order to get better marks, particularly if pressure was put on him at home to do better work. As it turned out, none of our cases exactly fits this picture, but it may be of some interest that only one of the honest cases was under pressure at home whereas five of the dishonest cases were thus stimulated. Which of our items are associated with one group more than with another can thus be determined only by summarizing the facts and noting differences between the groups. This has been done in Table LI, which gives the percentage of cases in each of the three groups which "possess" the items of the detailed lists in Tables XLVIII–L.

TABLE XLVIII

HANDICAPS OF MOST HONEST CASES

		CASE NUMBER	2	5	6	7	11	31	38	39	41	42	43	44	48	49	1	4	12	25	28	30	34	37	40	45
I	Personal relations with family	Parental example dishonest *																								
		Personality of father *	4	4	4	4	4	–	4	4	3	4	4	4	4	4	4	–	–	4	4	4	3	3	3	4
		Relations between parents *	3	3	3	4	4	–	3	4	3	4	4	3	3	4	3	3	3	–	3	4	3	3	3	4
		Discipline divided *																							√	
		Discipline severe						√		√													√			
		Discipline spoiling		√																		√			√	
		Lack of supervision *																								
		Attitude of mother *	4	3	3	4	4	3	4	3	4	4	4	3	4	4	3	3	3	3	4	3	3	4	3	4
		Attitude of father *	3	3	3	4	4	–	3	3	3	4	4	3	4	4	3	3	3	3	4	4	3	3	3	3
		Foreign language used *																								
		Presence of more favored child							√													√	√			
		Subject an only child						√										√	√							
		Pressure on school work *																								
		Handicap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
II	Cultural status of family	Community rating *	10	10	10	12	7	10	8	10	10	7	7	12	10	10	7	7	10	1	7	9	–	8	7	10
		Home background level *	3	7	7	1	2	8	3	4	3	3	3	4	4	1	1	8	8	8	4	5	9	3	11	2
		Burdick culture score *	–	90	–	92	66	74	–	75	–	–	–	68	68	109	41	48	49	67	–	60	–	–	58	91
		Nationality or race *	A	A	A	A	H	A	A	A	Sc	F	F	G Sc	H	A	S	F	A	G	A	A	A	A	A	A
		Economic or social level rising		√	√		√				√	√			√						√					√
		Economic or social level falling *																								
		Ambition higher than attainment															√									
		Religion	–	P	P	P	J	P	P	P	P	P	P	P	J	P	P	–	P	–	P	–	C	P	P	P
		Handicap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0
III	The subject	Sex	B	G	B	B	G	B	G	B	G	G	B	B	G	G	B	B	B	G	B	G	B	B	B	G
		Intelligence *	–	+7	+10	+16	-1	–	-2	+26	+20	+12	+15	+9	–	+10	+10	-1	+1	+8	+7	-11	+1	+8	+16	+8
		Health poor									√	√										√		√	√	
		Age-grade displacement *	0	0	0	0	+2	+1	0	+2	-3	0	+2	0	0	0	0	-1	0	+2	-5	0	-5	-1	-1	0
		School deportment *	–	–	85	–	95	99	88	85	95	95	95	85	94	–	95	–	95	95	85	95	75	85	85	95
		Cheating of classroom *	4	1	4	1	3	2	2	3	2	3	4	3	5	4	3	4	3	2	3	3	3	4	4	4
		Maladjustment index *	3	2	4	3	4	4	1	1	0	0	3	0	4	3	1	3	1	4	11	2	2	9	2	8
		Handicap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1
		Total handicap score	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1

TABLE XLVIII — *Continued*

	Case Number	47	9	14	19	33	18	21	24	32	3	8	13	29	35	10	17	20	22	27	16	15	36	46	26	23
I. Personal relations with family	Parental example dishonest *																									✓
	Personality of father *	4	–	3	4	2	–	3	3	–	–	–	–	4	2	3	4	3	3	1	2	3	3	3	2	1
	Relations between parents *	4	–	1	3	S	3	3	3	–	–	–	–	–	1	2	3	3	3	–	1	–	3	3	1	1
	Discipline divided *		✓								✓	✓					✓				✓	✓	✓	✓	✓	✓
	Discipline severe				✓											✓		✓	✓				✓	✓	✓	✓
	Discipline spoiling							✓			✓	✓	✓				✓			✓	✓		✓			
	Lack of supervision *																					✓				✓
	Attitude of mother *	4	4	–	3	3	3	3	3	3	3	3	3	D	3	2	3	3	3	3	2	2	2	2	3	2
	Attitude of father *	4	4	–	3	–	3	3	3	2	D	–	–	4	–	3	3	–	3	–	3	–	2	2	2	1
	Foreign language used *				✓				✓	✓							✓				✓	✓				
	Presence of more favored child													✓												
	Subject an only child	✓				✓					✓				✓								✓			
	Pressure on school work *																								✓	
	Handicap	0	1	1	1	2	0	0	1	2	2	1	0	1	2	2	2	0	0	1	5	4	3	3	5	7
II. Cultural status of family	Community rating *	10	12	12	10	8	7	1	1	8	10	10	4	1	1	7	4	1	1	1	7	4	1	7	4	1
	Home background level *	4	5	13	10	8	10	14	8	8	11	10	11	5	11	11	11	11	12	13	15	12	11	12	11	14
	Burdick culture score *	–	–	–	31	81	–	29	–	–	–	71	63	49	49	–	–	24	15	32	46	50	60	55	-	42
	Nationality or race *	A	G A	A	I	A	H	N	I	F	A	A	A	N	N	A	I	H	N	N	H	A	N	S	A	G I
	Economic or social level rising				✓									✓	✓									✓		✓
	Economic or social level falling *						✓					✓	✓			✓									✓	
	Ambition higher than attainment							✓								✓						✓				✓
	Religion	P	–	P	C	P	J	P	C	P	–	C	–	P	C	C	C	J	P	P	J	C	P	P	C P	C
	Handicap	0	0	1	1	0	2	2	2	0	1	2	3	2	2	2	2	2	2	2	1	2	2	1	3	2
III. The subject	Sex	B	B	B	G	B	G	B	G	G	G	B	G	G	G	B	B	B	B	G	G	G	B	B	B	G
	Intelligence *	+1	+6	−3	−8	+13	–	−9	−4	+14	+8	−2	0	+1	+11	+11	−3	−15	−15	−14	−9	+5	+10	−10	+8	−6
	Health poor					✓						✓						✓							✓	
	Age-grade displacement *	0	+2	0	−4	0	−1	−2	0	−2	0	−3	+1	0	+2	−4	−4	−8	0	−3	−2	+1	+1	0	−6	−1
	School deportment *	85	80	85	93	92	95	89	88	95	95	–	99	82	89	85	75	65	75	95	92	95	72	80	80	76
	Cheating of classroom *	5	5	3	3	2	–	14	2	2	4	1	2	6	2	3	2	12	10	10	3	3	2	5	6	6
	Maladjustment index *	10	3	0	4	0	7	0	0	5	10	7	5	4	4	6	3	4	–	1	2	5	7	6	1	5
	Handicap	1	1	0	0	0	1	1	0	1	1	1	1	1	0	1	1	3	3	2	0	1	2	3	2	3
	Total handicap score	1	2	2	2	2	3	3	3	3	4	4	4	4	4	5	5	5	5	5	6	7	7	7	10	12

TABLE XLIX

HANDICAPS OF MOST DISHONEST CASES

	CASE NUMBER	47	4	14	35	31	6	11	12	13	19	20	40	42	50	52	1	5	10	22	39	43	48	51	15	16	24
I Personal relations with family	Parental example dishonest *																				√		√				
	Personality of father *	–	4	3	3	4	4	3	4	3	4	4	4	3	4	–	3	4	3	–	3	3	–	3	1	4	–
	Relations between parents *	–	3	3	3	4	3	2	3	3	3	3	3	3	–	–	–	–	3	3	4	–	3	–	1	3	3
	Discipline divided *		√								√												√				
	Discipline severe			√									√										√			√	
	Discipline spoiling		√		√				√		√						√						√		√	√	
	Lack of supervision *																										
	Attitude of mother *	3	3	3	3	4	2	3	3	3	3	3	4	3	3	4	3	3	3	3	4	D	2	3	2	3	3
	Attitude of father *	3	4	3	3	2	3	3	3	3	3	3	3	3	3	D	3	3	3	3	3	3	3	3	–	3	3
	Foreign language used *								√	√									√								
	Presence of more favored child		√			√						√														√	
	Subject an only child	√					√		√					√		√	√										
	Pressure on school work *						√			√																√	
	Handicap	0	1	0	0	1	2	1	1	2	1	0	0	0	0	1	0	0	1	0	1	1	3	0	3	1	0
II Cultural status of family	Community rating *	8	10	7	10	10	10	1	10	7	7	1	10	1	10	10	10	4	–	7	–	1	10	4	7	10	1
	Home background level *	4	7	8	10	3	8	7	6	8	7	10	3	8	6	10	10	8	7	10	6	8	9	10	12	7	6
	Burdick culture score *	86	54	47	59	77	57	78	70	51	53	49	68	52	49	44	46	59	32	60	32	41	72	–	–	49	39
	Nationality or race *	A	A	I	E	A	G	A	H	H	I	H	A	N	A	F	A	F	I	H	P	N	A	A	N	Fr	H
	Economic or social level rising			√	√							√	√				√		√		√		√				
	Economic or social level falling*																	√		√							
	Ambition higher than attainment						√		√																		√
	Religion	C	P	C	P	P	P	P	J	J	C	J	P	P	P	P	P	P	C	J	C	P	P	P	P	P	J
	Handicap	0	0	1	1	0	0	1	0	0	0	2	0	1	1	1	1	2	1	2	1	1	0	2	1	1	2
III The subject	Sex	G	B	G	B	G	B	G	G	B	G	G	G	G	G	G	G	B	B	G	G	B	G	G	B	B	B
	Intelligence *	–3	–8	–1	+3	–10	+1	+20	+3	+2	–4	–4	0	–6	+18	–7	–20	–4	–15	+20	–2	+2	+13	+12	–7	+4	–9
	Health poor		√		√			√	√					√											√	√	
	Age-grade displacement *	–3	0	0	–1	0	–1	0	+4	0	0	–1	+3	0	+4	–1	0	–4	–1	+3	+4	0	+2	–3	–2	+4	–2
	School deportment *	91	–	85	–	95	–	90	95	85	95	84	85	93	95	95	–	–	85	89	87	85	–	85	85	70	85
	Cheating of classroom *	2	1	3	2	4	4	5	3	3	3	2	4	12	4	5	4	4	3	2	5	–	2	2	3	3	6
	Maladjustment index *	2	2	4	3	3	3	1	4	2	7	3	5	1	3	2	5	7	3	1	4	6	4	7	3	3	8
	Handicap	0	0	0	0	1	0	0	1	0	1	0	2	1	1	0	2	1	1	1	1	1	0	1	0	2	2
	Total handicap score	0	1	1	1	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	4	4	4

TABLE XLIX — *Continued*

		CASE NUMBER	25	28	44	46	49	2	7	21	27	34	9	17	26	30	45	8	18	38	29	41	31	36	23	37	32	33
I	Personal relations with family	Parental example dishonest *		✓					✓		✓								✓								✓	✓
		Personality of father *	3	1	–	3	3	–	3	4	1	3	3	2	3	3	3	2	2	–	3	1	1	1	2	3	2	1
		Relations between parents *	2	3	3	3	–	–	3	–	3	3	2	2	3	2	–	3	2	–	3	1	–	1	3	–	2	1
		Discipline divided *			✓		✓	✓		✓		✓		✓						✓	✓	✓		✓	✓			✓
		Discipline severe		✓		✓		✓			✓		✓	✓				✓	✓		✓			✓		✓		✓
		Discipline spoiling			✓		✓	✓	✓			✓								✓								
		Lack of supervision *							✓						✓		✓						✓		✓	✓		✓
		Attitude of mother *	3	3	2	2	3	2	3	–	3	3	2	2	D	3	3	4	3	3	3	2	3	3	2	2	2	2
		Attitude of father *	3	3	2	2	3	–	3	3	3	3	3	2	4	3	3	2	3	D	3	2	D	1	2	D	1	1
		Foreign language used *	✓	✓			✓				✓					✓					✓	✓	✓	✓	✓	✓	✓	
		Presence of more favored child										✓																
		Subject an only child					✓													✓								
		Pressure on school work *				✓	✓																					
		Handicap	2	3	3	3	3	2	2	1	3	1	2	5	2	2	2	2	3	2	2	6	4	5	6	4	6	7
II	Cultural status of family	Community rating *	1	12	10	8	10	4	7	12	12	1	7	7	1	1	1	4	7	1	1	7	1	1	1	1	1	1
		Home background level *	9	11	9	5	7	12	7	10	11	10	11	11	9	13	9	12	14	15	10	12	14	13	11	12	14	14
		Burdick culture score *	74	12	56	–	52	–	–	48	–	33	35	49	33	49	42	44	–	26	25	–	23	22	46	–	–	38
		Nationality or race *	H	I	A	Hu	Fr	A	H	Sc	I	H	A	A	N	H	N	A	A	N	I	C	P L	H	L	I	I	I G
		Economic or social level rising	✓	✓	✓				✓		✓	✓				✓	✓							✓	✓		✓	✓
		Economic or social level falling *				✓	✓						✓						✓			✓				✓		
		Ambition higher than attainment		✓					✓		✓		✓					✓									✓	
		Religion	J	C	P	C	C	P	J	P	C	J	C	–	P	J	P	P	C	P	P	C	C	C	C	C	P	C
		Handicap	1	1	0	1	1	2	1	1	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	3	2	2
III	The subject	Sex	G	B	B	G	B	G	B	B	B	B	G	G	B	G	G	B	B	G	B	G	B	G	B	B	G	G
		Intelligence *	+3	–8	–2	+9	+16	–15	+29	–10	–10	–6	–14	+1	–6	–11	–21	–10	+3	–5	–12	+2	–14	–11	+4	–9	–23	–18
		Health poor											✓													✓		
		Age-grade displacement *	0	0	+1	–1	+2	–2	+2	0	–2	0	–4	+1	–2	0	–6	–4	+1	0	–4	0	0	0	–4	–6	–7	–1
		School deportment *	85	85	85	95	97	95	85	75	85	76	84	95	82	97	85	70	80	75	73	85	78	95	65	75	73	85
		Cheating of classroom *	2	2	3	2	2	4	4	3	4	12	5	3	14	14	2	5	5	10	10	2	14	10	3	10	14	10
		Maladjustment index *	6	3	10	0	2	3	7	9	2	3	7	3	6	0	8	6	11	8	7	3	3	3	5	6	3	3
		Handicap	1	0	1	0	0	1	2	3	1	2	2	0	2	2	2	3	2	3	4	0	3	2	2	3	3	2
		Total handicap score	4	4	4	4	4	5	5	5	5	5	6	6	6	6	6	7	7	7	8	8	9	9	10	10	11	11

TABLE L

HANDICAPS OF CONFESSORS

	CASE NUMBER	2	22	4	24	1	3	15	26	11	13	25	6	14	16	27	7	8	21	10	20	5	9	19	12	18	23	17
I Personal relations with family	Parental example dishonest *																				√						√	√
	Personality of father *	–	–	4	4	3	3	4	3	4	4	–	4	3	3	3	2	2	4	3	3	2	3	3	–	1	1	1
	Relations between parents *	–	–	3	3	3	3	3	3	3	3	–	3	–	3	3	–	2	3	2	3	2	2	5	–	–	1	1
	Discipline divided *			√		√						√	√				√	√		√		√	√			√	√	√
	Discipline severe			√			√	√	√						√			√	√			√			√	√	√	
	Discipline spoiling					√	√						√							√			√					
	Lack of supervision *													√			√				√						√	√
	Attitude of mother *	3	3	3	4	3	3	3	2	3	3	3	2	D	3	4	D	2	3	2	3	2	2	2	2	D	2	2
	Attitude of father *	–	–	3	4	3	2	3	2	3	3	–	2	4	3	3	2	3	3	2	3	2	2	1	2	1	1	2
	Foreign language used *							√		√					√	√			√			√			√			
	Presence of more favored child										√					√											√	
	Subject an only child					√	√											√						√				
	Pressure on school work *								√			√						√										
	Handicap	0	0	1	0	1	1	1	3	1	0	2	3	2	1	1	5	5	1	4	2	6	4	3	3	4	7	7
II Cultural status of family	Community rating *	7	7	7	1	1	7	1	8	1	1	10	10	1	1	4	10	10	1	1	1	1	1	1	1	1	7	1
	Home background level *	10	11	7	6	7	8	10	5	7	9	5	5	9	10	9	12	12	13	12	10	15	12	11	12	14	15	12
	Burdick culture score *	63	–	45	76	36	35	–	61	40	25	61	45	33	38	50	29	42	–	32	–	48	–	37	28	–	–	33
	Nationality or race *	Sc	H	G	H	No F	A F	I	Hu	I	I	A	A	N	I	H	A	A	I	H	N	I	H	N	I	N	A	N
	Economic or social level rising						√																					
	Economic or social level falling *								√			√			√										√		√	√
	Ambition higher than attainment	√															√											
	Religion	C	J	P	J	P	P	C	C	C	C	P	P	P	C	J	–	P	C	J	P	C	J	P	C	P	–	P
	Handicap	1	1	1	1	2	1	2	1	2	2	1	1	2	3	2	1	1	2	2	2	2	2	2	3	2	2	3
III The subject	Sex	G	G	G	B	B	B	B	G	B	G	B	B	B	B	B	B	B	B	G	B	B	G	G	G	B	B	B
	Intelligence *	+16	+6	–1	+23	–7	+1	+10	–9	–3	–15	+3	–2	–9	–17	+6	–7	+2	–10	–12	–34	–2	–13	–15	–13	–11	–4	+7
	Health poor		√				√		√						√			√				√						
	Age-grade displacement *	0	+2	0	+2	–3	+1	0	–2	0	0	0	+2	0	+1	+1	–2	–1	–4	0	–4	–2	–6	0	–1	–3	–1	+1
	School deportment *	90	95	83	88	75	76	83	100	88	82	75	70	65	64	71	85	–	60	83	75	75	83	75	79	57	77	73
	Cheating of classroom *	5	4	5	12	3	5	6	2	12	14	2	5	6	3	6	3	2	12	6	10	3	6	14	6	12	2	2
	Maladjustment index *	3	8	6	10	3	11	1	4	5	7	7	5	4	3	11	10	7	10	3	5	4	8	9	14	7	9	9
	Handicap	0	1	1	2	1	2	1	0	2	3	2	2	2	2	3	1	1	4	2	4	1	3	4	4	4	2	2
	Total handicap score	1	2	3	3	4	4	4	4	5	5	5	6	6	6	6	7	7	7	8	8	9	9	9	10	10	11	12

" Possession " requires no interpretation in the case of the check marks. In translating the *ratings* into percentages of possession, we called a rating of either 1 or 2, that is, below average, " possession " of the less desirable type of personality or relationship, such as " notoriously antisocial," for the father's personality; " grudging, antagonistic," for the attitude toward the child; or " complete antagonism, abuse, infidelity," in the case of the relations between parents. The nationality figures represent percentages of cases outside the following national or racial groups, which are selected for preference because of the facts reported in Chapter XI: A, E, F, Fr, G, S, Sc. The figure for the religious groups is not a handicap score and will be explained presently, as will also the figure for sex differences. " Possession " of age-grade displacement is indicated when the displacement is more than one year in either direction. The items which are given in terms of scores are translated into percentages of possession by dividing the scores at the mean or median, those falling on the unfavorable side, such as lower home background level, being counted as " possessing " the item. In the case of the Burdick scores, however, the limit is placed a little lower than the mean, *viz.*, at 45; and the same is true of the classroom cheating score, the limit of possession in this case being placed at 6 instead of at the mean. The means are given in Table LIV.

With Table LI before us we can now compare the prevalence of the items listed among the three groups. The items on which there is a considerable difference can readily be seen by glancing across the table. A difference of double the percentage between the honest group and either of the others is regarded as an indication that the item concerned represents what we may call a " handicap." These items are starred, and the starred items are combined in a handicap percentage for each section of the table and for the table as a whole.

Having determined in this way which of the items seem to differentiate the honest from the dishonest or confessing group, we are now in a position to give each individual a handicap score, consisting of the number of handicaps he labors under. These indi-

TABLE LI

PERCENTAGE OF PREVALENCE OF HANDICAPS AMONG THE H, D, AND C GROUPS

	HONEST	DISHONEST	CONFESSORS
TOTAL HANDICAPS	18%	31%	43%
I. PERSONAL RELATIONS WITHIN FAMILY	11	22	29
Parental example dishonest *	2	15	11
Personality of father *	15	27	26
Relations between parents *	18	29	35
Discipline of child	18	25	31
Divided *	22	29	44
Severe	22	31	41
Spoiling	22	27	19
Lacking supervision *	4	13	19
Attitude of mother *	13	27	42
Attitude of father *	13	22	50
Foreign language used *	12	29	26
Presence of more favored child	8	10	11
Subject an only child	16	15	15
Pressure on school work *	2	10	11
II. CULTURAL STATUS OF FAMILY	28	43	58
Community rating *	29	44	63
Home background level *	43	60	70
Burdick culture scores *	27	38	70
Nationality or race *	29	58	67
Economic or social level changing	37	53	26
Rising	27	38	4
Falling *	10	15	22
Ambition higher than attainment	10	17	7
Catholic	29	35	37
Jewish	27	35	38
Protestant	44	30	25
III. PERSONAL HANDICAPS	20	33	52
Boys	51	42	63
Girls	49	58	37
Intelligence *	36	62	63
Health	18	17	22
Age-grade displacement	20	31	19
More than 1 year over-age *	0	12	0
More than 1 year under-age	20	19	19
School deportment *	23	30	77
Cheating of classroom *	15	24	48
Maladjustment index *	29	39	70

vidual handicap scores are entered in Tables XLVIII to L, being figured for each section of the table separately as well as for all the items combined. All the items starred in Table LI have been used in computing the individual scores except the fact of race or nationality, which has been ignored;* and with some exceptions,† "possession" means the same thing as in Table LI. Before attempting to interpret the meaning of these handicaps, let us digress long enough to get clearly in mind certain fundamental differences between the honest, dishonest, and confessing groups which are in themselves significant in relation to the tendency to deceive.

DIGRESSION FOR THE PRESENTATION OF FUNDAMENTAL DIFFERENCES BETWEEN THE H, D, AND C GROUPS

The first class of differences to be reported consists of facts concerning occupational level, religion, and race or nationality. The first two are shown roughly in Table XLVII, but in the case of the religious differences the reduction in the number of cases from two hundred or more to one hundred twenty-eight entailed certain changes in the proportionate representation of the different religious groups. The facts are therefore given in Table LII for the cases actually used in our study.

The religious groups are indicated at the left of the table, and the adjoining column shows the approximate way in which these three communions are distributed in the school system. Column 1 then gives the number of cases of the combined HDC group that belongs to each denomination. Column 2 shows the per cent which each of these figures is to the total number of HDC cases, and may be compared with the proportional representation of the school community. Thus, whereas 60% of the school population taken as a whole are Protestant, in our HDC groups 53% are Protestant.

---

* Where the Burdick score is lacking, the fact of race or nationality is taken into consideration.

† The exceptions are as follows: home background limit at 10 instead of 9; Burdick score limit, 50 instead of 45; intelligence deviation, −10 instead of 0; school deportment, 80 instead of 85. The handicap for section II is based on three items: community rating, falling economic status, and *either* the home background level or the Burdick score, whichever is lower.

TABLE LII

Denominational Proportions in H, D, and C Groups

Denomination	Population Proportion	HDC		Honest				Dishonest				Confessing			
		1 Number	2 Per Cent	3 Number	4 Per Cent	5 Per Cent	6 Per Cent	7 Number	8 Per Cent	9 Per Cent	10 Per Cent	11 Number	12 Per Cent	13 Per Cent	14 Per Cent
Catholics	29	36	31	10	24	28	29	17	33	47	35	9	36	25	37
Jews	11	19	16	5	12	26	27	9	18	47	35	5	20	26	38
Protestants	60	63	53	27	64	43	44	25	49	40	30	11	44	17	25

Columns 3, 7, and 11 give the number of children of each denomination who are classified respectively in the H, D, or C group; and the adjoining columns, 4, 8, and 12, show the per cent of the honest group who are Catholic, Jewish, and Protestant, the per cent of the dishonest group who are divided in the same way, and likewise for the confessing group. Thus columns 4, 8, and 12 give what might be called the "denominational structure" of the three contrasting groups. It is essential that differences between the H, D, and C groups taken each as a whole, in intelligence, home background, and other factors be interpreted in the light of the preponderance of certain social factors in each of the three deception groups, and this is shown in columns 4, 8, and 12.

These percentages, however, do not give us a fair picture of the association of deception *with each denomination*, since the representation of the different denominations in the total HDC group is uneven. It is to be expected that there will be more Protestants than Jews in the honest group as there are more than three times as many Protestants as Jews in the total HDC group. Hence we give in columns 5, 9, and 13 the per cent of each religious group falling respectively in the H, D, and C groups. Thus 43% of the Protestants of the total HDC group are in the honest group, 40% of them are in the dishonest group, and 17% among the confessors. Columns 5, 9, and 13, therefore, show the number of honest, dishonest, and confessing cases that would have been found in each of the three religious groups if there had been one hundred of each religious group to start with.

We can now indicate what the structure of the H, D, and C groups *would have been* if there had been one hundred of each instead of the number indicated in column 1. This we do by showing in columns 6, 10, and 14 the per cent which each figure in columns 5, 9, and 13 is of the total of its column. Centering attention on these three columns, we now read the table as follows: If there had been one hundred Catholics, one hundred Jews, and one hundred Protestants in the entire HDC group, then 29% of the H group would have been Catholic, 27% Jewish, and 44% Protestant; also (column 10) 35% of the D group would have been Catholic, 35% Jewish, and 30% Protestant; while, finally, we see by column 14 that of the confessors 37% would have been Catholic, 38% Jewish, and 25% Protestant. This is the fairest comparison we can make of the constituency of the H, D, and C groups, and it is this figure which is used in Table LI to show the denominational representation. The differences are not large enough to warrant our regarding membership in one or another religious group as a handicap in the matter of honest behavior.

Table LIII analyzes the racial and national differences in the way used for Table LII.

As far as race and nationality are concerned we see from column 2 of Table LIII that the proportions for our HDC group are about the same as for the whole population, the percentages of which are given at the left side of the table. As before, columns 5, 9, and 13 show the proportion of each racial and national group falling in the H, D, or C group; and columns 6, 10, and 14 show what per cent of the H, D, and C groups respectively would have belonged to national groups I, II, III, and IV if there had been one hundred

TABLE LIII

Racial and National Proportions in the H, D, and C Groups

Racial and National Groups	Population Proportion	HDC		Honest				Dishonest				Confessing			
		1 Number	2 Per Cent	3 Number	4 Per Cent	5 Per Cent	6 Per Cent	7 Number	8 Per Cent	9 Per Cent	10 Per Cent	11 Number	12 Per Cent	13 Per Cent	14 Per Cent
I. A, E, F, Fr, G, No, S, Sc	58	65	51	34	69	52	41	22	42	34	20	0	33	14	14
II. I, Hu, L, P . . .	16	26	20	4	8	15	12	14	27	54	31	8	30	31	31
III. J	11	20	16	5	10	25	20	10	19	50	29	5	19	25	25
IV. N	15	17	13	6	12	35	28	6	12	35	20	5	19	30	30
II, III, and IV .	42	63	49	15	31	24		30	58	48		18	67	29	

of each of these four groups. The marked tendency for the American-born and North Europeans to be better represented among the H group is in conformity with the findings of Chapter XI and warrants our taking the fact of nationality and race into consideration, so far as this community is concerned, in making up the handicap scores of Table LI.

The figures for sex differences shown in Table LI are made in the same way as for religious differences, and need hardly be reported in detail. There were in all 69 boys and 59 girls, the percentage of each being respectively 54 and 46. Had there been one hundred of each, then, as may be seen by referring to Table LI, 51% of the honest group would have been boys and 49% girls. The figures for the dishonest group, however, are for boys 42% and for girls 58%.

We may now present certain facts concerning the intelligence, home background, deportment, maladjustment index, and classroom deception ratings of the three deception groups; but in studying these facts the reader should keep in mind the structural differences reported in columns 3, 7, and 11 of Tables LII and LIII.

Since we are dealing with fundamental group differences which we have shown to have some relation to the tendency to deceive, we should evaluate in some way the differences reported in Table LIV in order that we may see which factors seem to be most

TABLE LIV

CERTAIN HANDICAP SCORES OF THE H, D, AND C GROUPS

Group	Intelligence				Home Background			
	Median	Mean	SD	Number	Median	Mean	SD	Number
HDC	− .09	− .02	1.12	124	9.2	8.8	3.5	128
H	+ .63	+ .40	.99	45	8.0	7.6	4.0	49
D	− .35	− .21	1.10	52	9.3	9.3	2.8	52
C	− .65	− .38	1.11	27	10.1	9.9	2.8	27
	Deportment				Maladjustment Index			
	Median	Mean	SD	Number	Median	Mean	SD	Number
HDC	84.2	83.9	9.1	115	3.8	4.6	2.9	127
H	89.1	87.0	7.8	43	3.4	3.6	2.8	48
D	84.1	84.4	7.8	46	3.4	4.3	2.5	52
C	77.7	77.8	10.0	26	6.9	6.8	3.1	27
	Community Rating				Burdick Culture Scores			
	Median	Mean	SD	Number	Median	Mean	SD	Number
HDC	6.9	5.9	3.9	125	53.1	45.8	18.7	92
H	7.4	7.2	3.5	48	60.0	54.0	21.9	30
D	6.8	5.7	4.0	50	46.9	43.3	15.7	42
C	1.3	3.8	3.6	27	40.0	38.5	14.3	20

CLASSROOM DECEPTION RATING OF THE CLASSES REPRESENTED AMONG THE THREE GROUPS

GROUP	MEDIAN	MEAN	SD	NUMBER
HDC	3.6	4.9	3.5	126
H	3.2	3.9	2.6	48
D	4.2	5.1	3.8	51
C	5.4	6.2	3.9	27

responsible for them. This we do by expressing the differences between the means in terms of their standard error. In our discussion of how to interpret differences between group means we pointed out in Chapter VI that to be beyond the limits of chance such a difference would need to be at least three times its standard error. Consequently, the relative significance of the factors under discussion may be roughly shown in comparing the size of the figures in Table LV. Wherever these figures are over 3.0, we may be sure that the difference indicated by the symbol H–D, H–C, or D–C, that is, the honest group mean minus the dishonest group mean, or the honest group mean minus the confessing group mean, or the dishonest group mean minus the confessing group mean, is genuinely significant, and that ratios of less than 3.0 lose their significance as they approach zero. For convenience in tabulating, the differences are always expressed in the forms H–D, H–C, and D–C, no matter which mean happens to be the larger. Consequently a + sign means that the first mean of the pair is larger, and a − sign indicates that the second member of the pair is the larger.

TABLE LV

Statistical Significance of Mean Differences Reported in Table LIV

	H–D	H–C	D–C
Intelligence	+ 2.9	+ 3.0	+ 0.7
Home background	+ 2.4	+ 2.9	+ 0.9
Deportment	+ 1.6	+ 4.1	+ 2.9
Maladjustment index	− 1.2	− 4.3	− 3.6
Community rating	+ 2.0	+ 4.0	+ 2.1
Burdick culture score	+ 2.3	+ 3.0	+ 1.2
Classroom deception	− 1.8	− 2.7	− 1.2

Having now presented our major group differences, we return to the consideration of the problem of what essentially distinguishes the honest, dishonest, and confessing children from one another.

RELATIVE SIGNIFICANCE OF BASIC GROUP DIFFERENCES FOR THE DIFFERENTIATION OF THE H, D, AND C GROUPS

We have already noted that religious differences do not seem to account for the contrasting behavior of our three groups of cases. Whatever may be the biological and cultural factors associated with race and nationality, however, these seem to have some influence on the relative deceptiveness of the H, D, and C children. Let us turn then to Table LV and see whether the three groups differ from one another in any other significant way. Taking the ratios in order of size, we see that the maladjustment index heads the list, with a difference between the honest and confessing groups of 4.3 times its unreliability, and a still further difference between the dishonest and confessing groups of 3.6 times its unreliability. But this item fails to discriminate between the honest and dishonest groups, those who cheated and lied about it having about the same index as those who did not cheat at all. The next largest difference is in the matter of deportment, and here again it is between the honest and confessing groups, which differ from each other by 4.1 times the unreliability of the difference. Also, the ratio is 2.9 between the dishonest and confessing groups. That those who cheat and own up to it should receive so much worse deportment marks than either the honest children or those who cheat and don't own up to it raises an interesting question regarding the way teachers give their deportment grades. It would seem as though the effort to " get away " with certain forms of disapproved behavior was in some cases quite successful, and that those who tended to confess their faults were penalized for their pains.

Next comes the general character of the community in which the children live. In terms of probability the chances are 98 in 100 that the honest and dishonest are significantly different in this respect, and the difference between the honest and the confessors places the latter without doubt in the less desirable section of the town. This fact, coupled with the fact that with respect to intelligence, level of home background, and cultural level as measured by the Burdick test the confessors are also significantly lower on the scale than the honest while the dishonest are less so, assists us in classifying the confessors as a distinct group, ill adjusted to its circumstances, rather badly behaved on the whole, and lacking opportunities afforded by a good neighborhood and a comfortable home. Regarding the stimulus toward deception to which the children are subjected in the classroom (the last row of Table LV), the honest, dishonest, and confessors seem to be similarly exposed, but there is strong probability that the confessors as a group are subject to greater temptation than the honest.

From all this it should be apparent that no one factor accounts for a pupil being found in the H group rather than in the D or C group. The causes leading to honorable as against deceptive behavior are seen to be complex, as we suggested they would be earlier in this report. Our next thought is, therefore, that, while no single handicap is sufficient to explain deceit in any case, or even in any group, the cumulative effect of several handicaps operating at once may be adequate to discriminate between them. In order to pursue this suggestion, it is necessary to revert to the handicap scores which we assigned to each child in Tables XLVIII to L. Each score is the sum of handicaps faced by the pupil, no one of which seems to explain his conduct but all of which taken together may do so. Let us first compare the three groups with reference to their total handicap scores. Figure 58 shows the complete distribution in terms of the per cent of each group having the number of handicaps indicated at the left of the chart.

As we shall presently show, there is a very great difference in total handicap scores between the honest group and *both* the dishonest and confessing groups, and the difference between the dishonest and the confessors is probably a genuine difference and not due to chance. Even so, there is considerable overlapping, 5 out of the 49 honest children having a higher handicap score than the mean of the confessors and 14 of them having a higher handicap score than the mean of the dishonest children. However, only 2 of the 27 confessors have fewer handicaps than the mean handicap score of the honest, and similarly only 9 of the 52 dishonest are better off than the average of the honest in the matter of total handicaps. Furthermore, 29% of the honest have no handicap at all, whereas the same thing is true of only 2% of the dishonest and of none at all of the confessors.

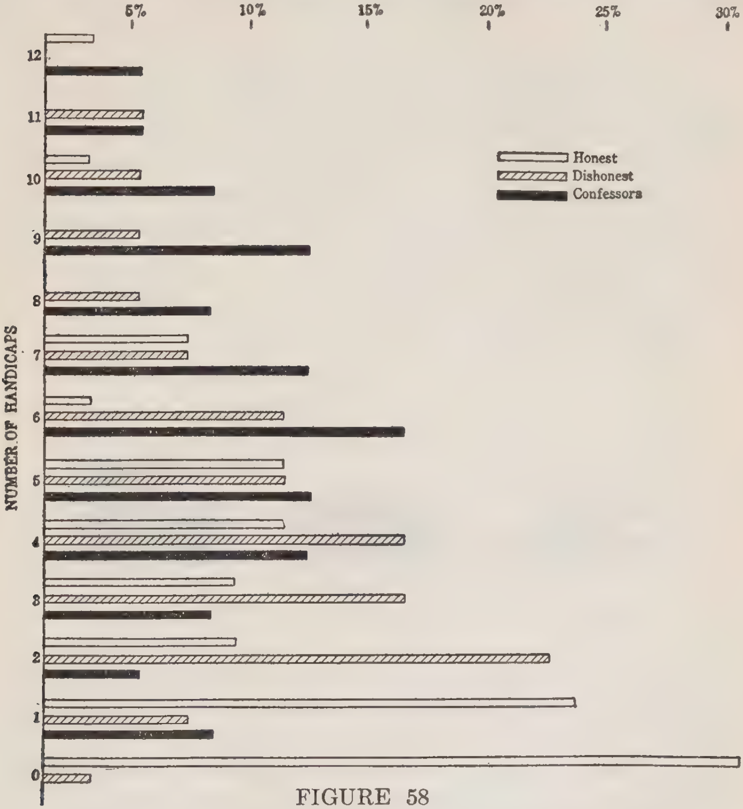


FIGURE 58

Graphic Distribution of H, D, and C Groups with Regard to Handicap Scores

Each bar represents the per cent of the group having the number of handicaps shown at the left.

Early in our discussion we explained that we had classified the handicaps in three types of items, (I) those referring to family relations, (II) those referring to the cultural status of the family, its cultural level, neighborhood rating, and socio-economic acceleration, and (III) those of a personal nature. It might prove illuminating to find the way in which our three deception groups compare with respect to each of these three classes of handicaps. This we do in Tables LVI, LVII, and LVIII.

Before turning to these tables let us examine briefly a graphic translation of the essentials in Figure 59. Each of the three rectangles of this chart represents the total number of handicaps to which the children of each group *might have been* exposed, there being in our list 9 handicaps of type I, 3 of type II, and 5 of type III, making a possible maximum of 17 for each child. Each of the columns I, II, and III represents one of the three classes of handicaps, and the proportion of possible handicaps actually suffered by each of the three deception groups is shown by the height of the black in each of the columns. One can thus see at a glance that the second group of factors shows a larger percentage of handicaps than either of the other two in the case of all three deception groups. This group of items consists chiefly of the home background score and neighborhood rating. The relative significance of the three classes of items can best be seen, however, by studying the tables, to which we may now turn.

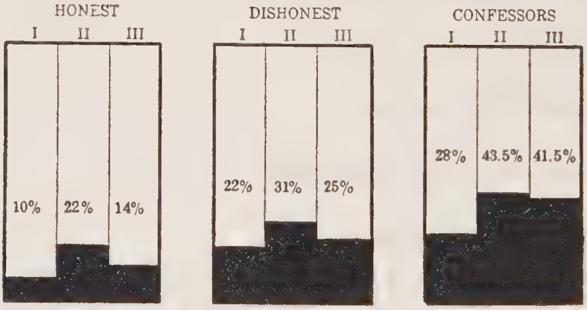


FIGURE 59

Comparative Handicaps of H, D, and C Groups

It is from the per cents at the extreme right of Table LVI that the chart of Figure 59 is drawn. The rest of the table gives exactly the same facts in terms of the average or mean number of handicaps of each type manifested by the H, D, and C groups respectively.

TABLE LVI

Differentiated Handicap Scores of the H, D, and C Groups

Handicap	Maximum Score	Mean			SD			Per Cent of Handicap		
		H	D	C	H	D	C	H	D	C
I. Family relations	9	.94	1.98	2.52	1.49	1.82	2.08	10.4	22.0	28.0
II. Cultural status	3	.88	1.25	1.74	.96	.78	.65	21.9	31.2	43.5
III. Personal status	5	.71	1.25	2.07	.90	1.07	1.19	14.3	25.0	41.5
Total	17	2.55	4.48	6.22	2.75	2.73	2.68	15.0	26.4	36.6

TABLE LVII

Relative Significance of Handicaps

The means of Table LVI are here weighted (each is divided by the SD of its distribution) so as to show what their relative size would have been if there had been the same number of handicaps in each section of items.

Handicap	Honest	Dishonest	Confessors
I. Family relations	.63	1.09	1.21
II. Cultural status	.91	1.60	2.69
III. Personal status	.78	1.17	1.74

TABLE LVIII

Significance of the Differences between the H, D, and C Groups Expressed as Multiples of the Standard Errors of the Differences

	I. Family Relations	II. Cultural Status	III. Personal Handicaps	Total Handicaps
D–H	3.16	2.14	2.73	3.54
C–H	3.50	4.65	5.15	5.66
D–C	1.14	2.97	2.95	2.72

Thus the honest children had an average of .94 handicap in the matter of family relations, whereas the dishonest had 1.98 handicaps of this type on the average, and the confessors 2.52, or two and a half times as many as the honest. Of 17 possible handicaps, the honest children had on the average two and a half apiece, the dishonest four and a half, and the confessors six and a quarter.

Turning now to Table LVII, we may compare the relative contribution to the total handicap made by the three groups of items. The home background and neighborhood factors are seen to be the largest for each of the three groups, H, D, and C, being half as large again as the family-relations items in the case of the honest and dishonest children and twice as great for the confessors. Personal handicaps have about the same importance as family-relations handicaps for the several groups.

Finally, then, Table LVIII shows us the extent to which the H, D, and C groups are genuinely differentiated by these three sets of factors as well as by the total handicap score, the distributions of which are shown in Figure 58. As already pointed out, the difference between the total number of handicaps suffered by the children is genuinely significant of their relative deceptiveness, for the ratios in the last column of the table are, for the dishonest minus the honest and for the confessors minus the honest, considerably more than 3.0. The largest difference noted is between the honest and the confessors in the matter of personal handicaps, such as intelligence, maladjustment index, and deportment (see the list in Table LI). Here the mean difference is over five times its unreliability. Next comes the cultural and neighborhood difference between the same two groups, with a ratio of over four and a half. The honest and dishonest groups, though genuinely differing in the total handicap score, show an absolutely certain difference for the separate types of handicap in the case of family relations, with personal handicaps a close second in importance. And interestingly enough, the dishonest and confessing groups are practically distinct in the matter of both background and personal handicaps.

It is quite clear that we can differentiate our groups by reference to the total number of handicaps suffered and, at some points, in the matter of the type of handicap. But the distributions of Figure 58 show us at once that we have not accounted for the behavior of all of our *individuals*. Considering the fact that we are dealing in all our cases with only two kinds of cheating, school and home, and these measured by only three tests all together, it may be claimed that we have gone about as far as could be expected in tracing the causes of this special form of dishonesty. We will do what we can, however, to account for our individual differences, and for this purpose we shall consider not the total *number* of handicaps under which the pupil suffers, but particular *combinations* of handicaps. We should do this, however, in the light of the total picture that we are now able to draw of the general characteristics of each of our three groups. A study of Tables LI, LVII, and LVIII, in which their differences are set forth, leads to the following descriptions.

Description of H, D, and C Groups

1. The Confessing Group. Here are the children with an unusually large number of personal handicaps. They have low intelligence and their maladjustment scores show them to be badly adjusted to their general environment. That they do not get along well with their teachers is evidenced by the fact that their deportment average is only 78 as compared with 87 for the honest children. About two-thirds of them are boys, or almost twice as many as we might expect from the distribution of the sexes in the HDC group as a whole, 54% of whom are boys.

The homes from which these children come are situated in the worst districts of the town and exhibit a level of cultural and social status considerably below the average. The details of the home background do not stand out clearly save by way of contrast with the other two groups; in almost every respect that one could think of we find among the confessors a far larger amount of unwholesome influence than among the honest children, and in most matters their homes are less favored than those even of the dishonest group.

2. The Dishonest Group. These children suffer from fewer handicaps than the confessors, being particularly weak, however, in the matter of family relations. On the whole they are somewhat less intelligent than the honest group. But in deportment they are about average and show no great sign of general maladjustment. It is rather in the total family situation that the dishonest children are inferior, for not only do they live in a somewhat less desirable section of the community, but the evidences of culture and social achievement are fewer. The most conspicuous differences between the honest and dishonest are to be found in parental example, attitude, and supervision, although in almost every respect there are more cases of unwholesome influence among them than among the honest.

3. The Honest Group. In comparison with the other groups the honest children stand out clearly from the confessing group, with higher intelligence, no sign of maladjustment, and excellent school deportment. They live in better neighborhoods and their families are on a far higher social level, showing few examples of parental inferiority. Boys and girls are divided about as one might properly expect from their proportion in the entire group. Their differentiation from the children who cheated and also lied about it, however, is not quite so distinct, although it is apparent that with respect to all the advantages which set them off from the confessing group they are also almost invariably superior to the dishonest group. The picture is somewhat blurred, however, and for this reason it is necessary to study our cases individually rather than merely *en bloc*. To this more difficult task let us now proceed.

INDIVIDUAL DIFFERENCES BETWEEN HONEST AND DISHONEST CHILDREN

In undertaking to explain why some children are honest and some are dishonest in terms of particular combinations of handicaps they may possess, we may as well admit at once that we are doomed to failure. We can, to be sure, reach a better " understanding " of a given child by gathering all the facts about him into one place and letting them coalesce, as it were, into a complete picture; but such a process does not "account for" the child in a scientific sense: it does not subsume his behavior under a law. There are some who feel that the idea of "law" is hardly applicable to human behavior in the concrete, and that all we may properly expect is a sort of insight into a man's total character which recognizes at once his entire uniqueness. And no one is apt to question the thought that we are not likely to come upon two children who have precisely the same combination of handicaps and advantages, which makes the discovery of a typical combination or law of combination out of the question. This is one of the weaknesses of the case method. We think we have found in some particular concatenation of circumstances the real explanation of a refractory child's conduct. But scientific confidence in our explanation rests upon the probability of the recurrence of the precise group of causes we have listed in association with the precise social defect we are studying.* And this is just what does not happen. No two cases are alike or, if several are much alike, they are too few in number to establish a law.

With this precaution in mind, let us examine a few of our own cases. Here, for example, is a girl from an exceedingly poor home. The father is dishonest and of a rather vicious personality. The parental relations are unhappy. The parents' attitude toward the child is unsympathetic or hostile, and their discipline does everything to her except spoil her. They live in the worst part of the community, and the general level of the home background is almost as low as there is. One parent is German and the other Italian, and they report themselves as Catholic. The child herself is of less than average intelligence but is somewhat ahead in her school grade, and her teachers evidently regard her as a nuisance, for her deportment trend is 76. Furthermore, 60% or more of her classmates cheated on the test taken in school. The child's neurotic index, however, is only a point higher than the average. This would seem to be an almost perfect picture of a child who has the handicaps leading most frequently to deception. Yet this child did not cheat at all. We are tempted to resort to the expression, "She's not that kind of girl," which illustrates the case method type of conclusion.

---

* It should be remembered that we are dealing here with scores on our IER school and home tests.

Here are two children of the same family. One is in the honest group and one is in the dishonest group. They have the same general home background and are treated by their parents in much the same way. These background factors yield a general handicap of 5 in each case. Whatever differences there are between them must be personal. Are we on the track of a genuine explanation when we note that the honest child is a boy of superior intelligence, that the dishonest child is a girl of inferior intelligence, and that both of them are far younger than their classmates, which puts an added pressure on the girl, particularly as she has a record of poor health? The girl's case might indeed seem to be explained by this combination of circumstances — a superior brother, and attempting to do school work which is not only in advance of her age but for which she is doubly disqualified by low intelligence and poor health. But this exact combination does not recur again, and furthermore, we find that honest cases Nos. 16 and 27 are similarly handicapped, both being girls accelerated in school but backward in intelligence, one a Negro and one a Jew. However, as noted, these girls were *honest*, whereas the girl we have been discussing was dishonest.

As for the boy of superior intelligence, it is of interest that there are only two such cases among the dishonest group (Nos. 7 and 49). One of these has an example of dishonesty in his parents, and the other is an only child, whose parents speak a foreign language at home, tend to spoil him, and at the same time nag him about his school work. Yet the confessors have among them a boy of superior intelligence (No. 24), and it would seem as though he had almost every advantage except that he is in a classroom which cheated nearly one hundred per cent. But the *honest* children from three rooms of like character were in every case considerably *below* average in intelligence.

And so we might go on. We have printed the individual cases in the order of their handicaps so that anyone who chooses to do so may pursue this elusive quest still farther. The critical cases are those of the honest who have high handicap scores, and those of the dishonest who have low handicap scores. These need to be accounted for in some such way as we have just now illustrated.

SUMMARY

Our study of the three groups of cases confirms our findings regarding the facts associated with deceit and illustrates them rather forcibly. It is clear that there are significant differences between the extremely honest and the extremely dishonest in respect to intelligence, home background, and school deportment, and possibly in the matter of race or nationality and sex. It is not clear, however, that such facts, whether taken separately, added together, or considered in certain combinations, can account for deceit in individual cases, although, as illustrated, a close scrutiny of the details may lead to a better understanding of the subject and, as in the case of the sister who cheated while her brother was honest, may suggest very definite ways of correcting the conditions that may possibly be leading to the practice of deceit.

PART III

MORAL VALUES IN CONTEMPORARY EDUCATION

CHAPTER XV

PROGRESSIVE METHODS AND SCHOOL MORALE

As was indicated in Chapter IV, we have used one or another of our techniques to measure the deceptive tendencies of some ten thousand children, all of whom were in school and nearly all of whom had been exposed to school influences for from four to seven years. As we reported in Chapter XII, we find that in many schools the tendency to cheat when opportunity is offered is somewhat more prevalent in the higher grades than in the lower, while in other schools the reverse is the case. Since, however, the membership of grade eight, say, in any one school is by no means the same as was the membership of grade five three years previously or even of grade seven the year before, the influence of the school as a whole can be measured only by its cumulative effect on individuals and not by the relative standing of the ascending grades. If the school is tending to make its children less and less deceptive the longer they remain in it, this fact will show in a negative correlation between deception and length of attendance at this school; but if it tends to allow children to become more and more deceptive the longer they stay, then this fact will be shown by a positive correlation between deception and length of attendance.

We have figured such correlations for four school populations, and the results are given in Table LIX for several types of deceptive behavior.

TABLE LIX

THE CORRELATION BETWEEN LENGTH OF ATTENDANCE AT A GIVEN SCHOOL AND DECEPTION IN SCHOOLS C, D, F TO J, AND P

	C	D	F TO J	P
IER school Xi	−.142	−.041		+.100
IER home Xi	+.148			−.076
CT ratio		−.103	+.081	
Out-of-class tests		−.015		
Stealing test		−.161		

In public school C and its affiliated school at institution D we find that most of the *r*'s are negative but very small. Whatever influence exists is in the direction of less cheating, not more. In private school P, however, whatever influence exists is in the direction of more cheating, not less, even though the school as a whole is far less deceptive than the public schools which we have tested. But these *r*'s contain the influence of age, slight as it is, since the longer children are in school, the older they grow. If we eliminate this factor by keeping age constant or by taking what amounts to the average of a series of *r*'s each of which shows the relation between deception and length of attendance for just one age group at a time, we get the true influence of the school. For the IER cheating at school in population C this *r* changes from −.142 to −.24, showing that apart from change due to age the school has an influence in the direction of greater honesty the longer the children stay in it. For school D the corresponding partial is +.003 and for school P −.001, which means that in these places cheating is almost totally unrelated to the length of time spent in school.

We have not made any general statements concerning the prevalence of the tendency to deceive since no one technique has been given to a large enough number of properly selected cases to make any generalization valid. Some idea of what has been found, however, may be gained from Figure 60, which shows the per cent of all the children taking certain kinds of tests who cheated at least once.

In Figure 60, the school populations have been lumped together. When school populations are dealt with separately, however, extreme differences between schools are noted, particularly between private and public schools. On one of the classroom tests, for example, we found that 40% of 1200 public school children cheated, whereas on this same test only 11% of 850 private school children cheated. The same difference was found in the case of a test done at home. These public school children were in good city schools in two cities, and the private school children were in six schools in various localities. On the other hand, we noted that some public school classrooms were as free from the tendency to cheat as the most honest of the private school classrooms.

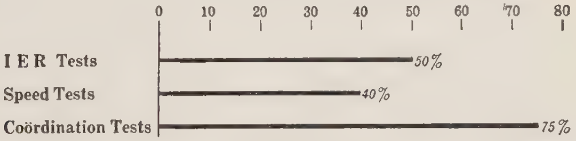


FIGURE 60

Per Cent of Cases Cheating on Three Kinds of Tests

The existence of these contrasts between classrooms seemed to us to open up some fundamental problems concerning the moral values inherent in contemporary educational situations. How is this difference to be accounted for? Is it due to difference in educational method? Or to the background of the home? How much effect does the teacher have through her personality, her convictions, her way of treating the pupils? Is there a general school morale, or a classroom morale, perhaps, or a group code which favors or hinders the development of classroom honor? These factors and others undoubtedly are operative, separately and in combination. Let us analyze them and weigh as well as we can their relative importance. In this chapter we shall concern ourselves with three: selected home background, progressive *versus* conventional school methods, and general school morale.

HOME BACKGROUND *VERSUS* PROGRESSIVE METHODS

If the superiority of the private schools tested is due to superiority in home background, then children in public schools coming from homes of the same economic and social condition as those from which the private school children come should show no more tendency to deceive than the private school children do. To test this argument, we selected thirty-three children from a public school who matched an equal number from a neighboring private school in age, intelligence, and home background as measured by the Sims Score Card.* Instead of exhibiting about the same amount of deception, as our argument requires, these two groups showed a significant difference in favor of the private school group. These facts are presented graphically in Figure 61, which gives the mean Xi scores of both groups for the IER school test and the Speed test.

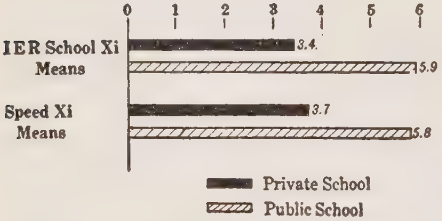


FIGURE 61

Comparative Deceptiveness of Public and Private School Children from the Same Socio-economic Level and of the Same Intelligence

In spite of the economic-social equivalence of the backgrounds of these two groups, there might still be subtle differences not measured by the Sims card which would influence one set of parents to send their children to a good private school charging tuition rather than to a free public school, and these subtle differences in homes might well be associated with different ethical codes. It seemed best to test the hypothesis under consideration still further, therefore, by taking two public schools drawing from the same population, but with one using progressive methods and the other using traditional methods. In this way the contrast in method between the two schools would be retained, but the two schools would be alike as to tuition, social prestige, and the like.

---

* Described in Chapter VIII.

Ideally what we need is a community in which there are two public schools, one progressive and one traditional, which are attended by equal numbers of children of the same ages, the same intelligence, and the same home background, and in which the children are assigned to one school or the other by chance. Naturally such an ideal situation could not be found, but we discovered one approximating it in a small town having two schools of which one (M) is a distinctly good but conventional school and the other (L) an experimental school conducted in connection with a normal school and with the reputation of being one of the best examples of progressive method in the East. Both schools are public and free, and, so far as could be determined, each school draws its pupils from its immediate neighborhood. The local school people, furthermore, felt that there was no difference between the two groups as to home background.

The details of this comparison are presented fully in Book Two and will be merely summarized here. We gave ten deception tests in all, the six Speed tests, the three Coördination tests, and the Arithmetic test from the IER battery. The fourth-grade children omitted the Arithmetic test and one of the Speed tests. Grades five to seven also had the Sims Score Card, and for all the children scores from the McCall Multi-mental Test were available.

Inasmuch as the fourth grade had only eight chances to cheat as against ten for the rest, we translated the cheating scores into cheating ratios, dividing the number of c's each child scored by the number of chances he had to cheat. The mean of this cheating or CT ratio for each grade and each test is graphically portrayed in Figure 62.

These differences in deceptiveness are significant and are in favor of the experimental school. Grade for grade, the progressive school children are less deceptive than those attending the more conventional school. As is explained in Book Two, the contrast between the two schools cannot be accounted for by the differences in the age, mental age, or IQ of the two groups. In spite of local opinion, there was a significant difference between the schools in the Sims home background score, the experimental school rating one point higher. But when the cases with lower socio-economic scores were eliminated from the conventional group and the means thus equalized, the deception differences remained as they were. Furthermore, in this particular population, the Sims score correlated *positively* with deception, instead of negatively, as is the case with a large unselected population, so that if factors measured by the Sims card were the cause of the difference, the traditional school should have proved *less* deceptive rather than more.

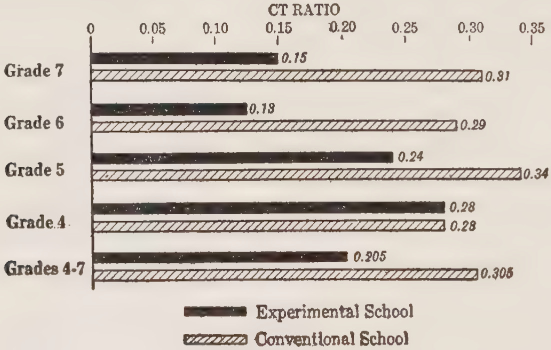


FIGURE 62

CT Ratios, Populations L and M

Another check on home background factors is found in the occupational level of the groups. As reported in Chapter IX, the higher occupational levels are associated with less cheating than are the lower, generally speaking. There is a distinct tendency for the children of the conventional village school to represent occupations of lower economic-social rating than the children of the progressive school. But when the two populations are classified by occupational level, the progressive school shows less deception at *each* level. The facts are shown graphically in Figure 63, which is based on Table CXXXIV of Book Two.

One final bit of evidence on the matter of home background remains to be brought forward. In the experimental school we found twelve children who were brought to the school from a neighboring city. Since they were not residents, we have not included them in any of the figures reported. Evidently their parents selected this school voluntarily, placing themselves thus in the same general category as parents who select a private school to which to send their children. It is a matter of some interest that these children were just about halfway between the experimental group and the conventional school population. The cases are too few to afford a basis for generalization, but such as they are they lend support to the judgment that home background makes a real difference in the behavior of the children, but is in any given school situation less significant than the influence of the school itself.

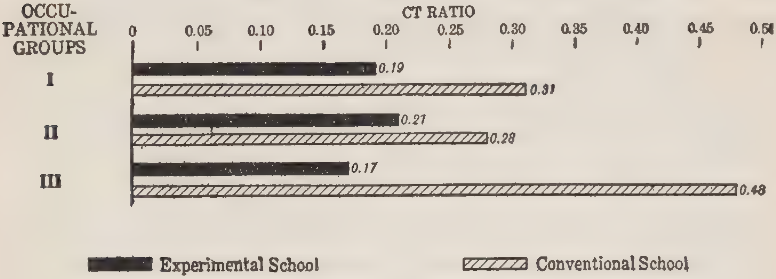


FIGURE 63

Mean CT Ratio of Each Occupational Level for Schools L and M

So much for external evidence regarding the effect of home background. Let us now turn to the internal evidence. Figure 62 shows differences in CT ratio from grade to grade in the two schools. In the fourth grade the two schools are seen to be alike, a wide difference appears in grade five, and the gap is still greater in grades six and seven. Whether or not the children in the higher grades have been in the school longer than those in the lower grades we do not know, but the experimental school has been under its present management long enough for the seventh-grade pupils who have been living in this community to have had the benefit of progressive methods through the greater part of their school life. If, however, the change from grade to grade is not to be accounted for by the accumulation of moral values, it may be that the similarity of the fourth grades is due to similarity of the fourth-grade teachers and that greater differences in method appear in grades six and seven. In either case the widening gap between the two schools is to be explained only by reference to their respective methods.

We here conclude the discussion of the relative significance of home background and progressive methods in accounting for school differences in deception. Whatever influence home background may have on behavior, there still remains sound evidence for believing that progressive school experiences are not as likely to be associated with the tendency to deceive as are conventional school experiences. Without dropping out of mind either of these two factors, let us now introduce a third, which we shall call school morale.

SCHOOL MORALE

This third factor is suggested by the fact that private schools are much alike as to the honesty of their pupils, even while varying widely in method from most progressive to very traditional. Also public schools are found which vary greatly in deceptiveness even while much alike in general method. Let us see, then, whether a third factor, such as school morale, can be isolated from general method and home background.

Unfortunately, we do not have clear cases of all three variables operating in known amounts, but in the following schools a rough estimate may be made of the status of each variable.

School	Technique	Morale	Home Background	
a. Public	Experimental	?	Outlying	High
b. Public	Conventional	?	Village	High
c. Public	Conventional	Good	Outlying	Medium
d. Public	Conventional	Good	Outlying	Medium
e. Public	Conventional	Poor	Village	Medium
f. Private	Experimental	Good	City	High
g. Private	Experimental	Good	City	High
h. Private	Conventional	Good	Mixed	High

We shall report in Table LX the comparable facts we have for these schools in the matter of deception and then discuss their significance.*

TABLE LX

DECEPTION SCORES IN GRADES 5 AND 6

SCHOOL	TEST A †			IER SCHOOL TEST			HOME TEST		
	Number	Mean	Per Cent	Number	Mean	Per Cent	Number	Mean	Per Cent
a	34	1.00	14.7						
b	103	3.80	54.4						
c	70	1.36	21.5	71	3.10	20.6	70	2.70	40.2
d	22	2.23	45.4	22	2.53	22.7	21	4.65	40.9
c and d	92	1.57	27.2	93	2.06	21.1	91	3.15	40.4
e	62	2.87	23.9	62	4.09	29.2	47	3.88	44.7
f	146	1.44	13.				146	1.63	15.8
g	80	1.39	12.5				79	1.39	10.1
h	27	1.45	7.4						

† One of the IER tests, though not always the same one. Had identical tests been used, the scores reported for (c), (d), and (e) might have been slightly larger. All mean scores are Xi's and represent amounts of deception.

Schools (a) and (b) are the ones we have just been discussing, (a) being the one connected with the normal school, situated some little distance from the village, and (b) being the school in the center of the village. It will be recalled that our Sims scores did show some difference in socio-economic and occupational level between the children attending (a) and those attending (b), and it was recognized that subtle factors not measured by the Sims card might be influencing the two sets of children in diverse ways. One group, for example, lives near the center of the town and the other on the outskirts. The parents of the latter group may have chosen this place of residence partly because the school here was known to be better or partly because the family was less dependent on the village for amusements and service. Such discrimination on the part of the parents might well be associated with differences in the behavior of the children.

---

* In Book Two, Chapter X, the unreliability of differences such as those given in Table LX is reported.

Schools (c) and (d), however, are also on the outskirts of the village in which school (e) is located; and although the village school, just as in the case of (a) and (b), is much more deceptive than (c) or (d), there is no difference in the amount of deception practiced at home. From this it may be inferred (1) that the fact of living on the outskirts is not in itself evidence of such differences in homes as would account for differences in deceptiveness, and (2) that differences in deceptiveness between (a) and (b), (c) and (e), and (d) and (e) are due not to home background, but to teaching method or school morale or both. We have no evidence concerning the morale of schools (a) and (b), so that both general morale and general technique may be working to increase deception in the case of (b) and decrease it in the case of (a). But with (c) and (d), there is no contrast in teaching method. All three schools are conventional suburban schools under one supervision. There is, however, a distinct difference in the *atmosphere* of schools (c) and (d) as compared with (e). School (e) is in the same building with older grades which draw from all social levels in the community. There is a feeling of " tension " here and a certain arbitrariness of discipline not noticeable in schools (c) and (d). Whatever may be true of (a) as compared with (b), it is probable that the difference between (c) or (d) and (e) in the matter of deceit is due not to teaching technique, but to some such factor as school morale.

Now let us consider schools (f), (g), and (h). These are all private schools, drawing from a selected home background. Schools (f) and (g) are experimental and progressive and consist almost entirely of city children. School (h), though a school with fine morale, does not pretend to use the methods found in (f) and (g), yet in school (h) we find as little deception as in (f) and (g). Clearly, then, difference in technique is not in this case the significant factor. We must therefore attribute the likeness of (h), (f), and (g) in honesty either to likeness in home background or to likeness in morale. But we have already demonstrated in the case of (a) *versus* (b) and (c)–(d) *versus* (e) that likeness in home background does not inevitably produce likeness in deception, but may be associated with *difference* in deception if morale, or morale in combination with technique, is sufficiently diverse. Hence there is left only morale as the predominant source of differences and likenesses exhibited in these schools.

Finally it is rather extraordinary that schools (c) and (d) should compare favorably with (f), (g), and (h), showing about the same amount of deceptive behavior, for (c) and (d) are public schools using traditional methods, whereas (f) and (g) are private schools using progressive methods and (h) is a private school using traditional methods. This likeness, therefore, cannot be due to progressive teaching methods nor to highly selected home background. Again morale is left as the only common variable by which to explain the facts.

In thus emphasizing morale we do not reject our previous conclusion that progressive methods are more likely to be associated with classroom honor than are conventional methods. Rather are we trying to point out how the evidence at hand seems to require that we discriminate between the more formal and technical aspects of progressive method and the type of school morale or spirit with which it is likely to be (and may inherently be) associated. It is the latter rather than the former which the progressive schools under consideration share with the more conventional schools of the same level of school honor, and which we conclude must give the progressive school its advantage. It remains now to consider certain components of morale and their relations to the deceptiveness of children. This we shall do in the next chapter.

CHAPTER XVI

TEACHER INFLUENCE

"School morale," as has been suggested, is rather a vague term and its sources are not clearly known. We have been thinking of it as the product of the general administrative policy of the school system, the character of the supervision, the relation of teacher and pupils. It is with the particular aspect of morale that expresses itself in the attitude of the teacher toward the pupils and the attitude of the pupils toward the teacher and the school that we wish now to deal. In this chapter we shall discuss the influence of the teacher.

It is not possible, with the data at hand, to distinguish between the influence of the teacher's personality and that of her method. The personality factors could be objectively studied if time permitted and would doubtless resolve themselves into particular manners and skills, most of which could be controlled. Some of these manners and skills would be found to be included in the general theory underlying the more advanced schools, such as respect for the pupil's personality. Many teachers, quite untouched by modern movements in educational practice, show genuine respect for their pupils in their contacts with them, so that even formal classroom procedures have, under their guidance, a quite different moral effect from what is found when such respect is lacking.

We do not know which of the teachers whose pupils have been tested possess this attitude toward their children, and it is mentioned only as a possible illustration of real differences among teachers who are working along traditional lines. Certainly we find extreme differences in the deceptiveness of classrooms that may be accounted for in part, at least, by reference to some such difference among teachers in personality and attitude. Typical illustrations from three different schools are given in Figure 64.*

Case I is a school in which cheating was almost universal in three classrooms. In the 6A group, however, there was significantly less. This class differs from any of the other three by more than four times the standard error † of the difference. Yet there was no difference among the rooms in the way the pupils were selected. This is true also of cases II and III.

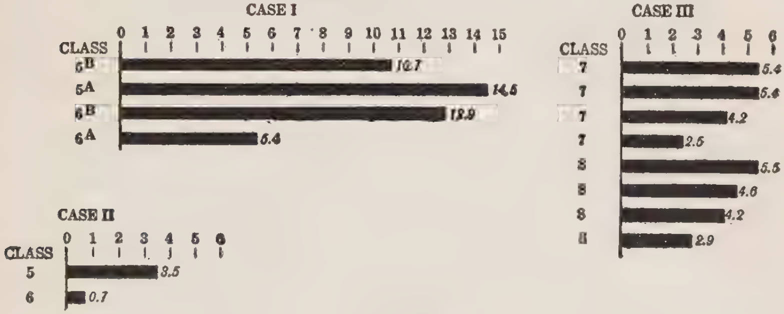


FIGURE 64

Mean Xi Cheating Scores of Adjoining Rooms of Three Schools

Case II is a school in which there was relatively little cheating. Yet even here the two rooms differ by more than three times the standard error of the difference.

Case III is from a junior high school in a mid-western city. Each group has its home room and a certain amount of class organization. In both the seventh and eighth grades there is a significant difference between the bottom group and the top group.

The mere fact that differences between classes occur may not be important. But if such differences are repeated when the same pupils are subjected to other tests, they point more certainly to the existence of some constant factor or factors in the situation. We do not, as a matter of fact, find that all classrooms show such constancy in behavior, but a large number do. This is illustrated in Table LXI, which ranks certain classes in grades four, five, and six of four schools according to their honesty in either two or three tests. The teachers and pupils are the same for each test reported. Each school may be expected to possess considerable homogeneity in general method, type of teacher, and pupil background.

---

* The figures are given in full in Book Two, Table X.

† For explanation of terms, see Chapter VI.

TABLE LXI

RANK ORDER OF CERTAIN CLASSROOM DECEPTION MEANS

SCHOOL I			SCHOOL II	
Speed	Puzzles	IER	Speed	Puzzles
1	1	6	1	1
2	2	3	2	2
3	3	1	3	3
4	4	2	4	5
5	6	4	5	4
6	5	5	6	6
SCHOOL III			SCHOOL IV	
Speed	Puzzles	IER	Speed	IER
1	2	2	1	1
2	1	3	2	2
3	3	4	3	3
4	4	1	4	4
5	3			

In each case the classes are arranged in order from the most honest to the most dishonest according to mean scores, the first column giving the ranking for the first test and the second and third columns giving the ranking for the other two tests. Comparison of the Speed and Puzzle test ranks shows only two displacements of one step each among twelve classrooms, and in school IV the Speed and IER ranks are identical. In none of these instances did the same examiner appear twice in the same room, so that we may feel sure that whatever is responsible for the relative constancy of these groups is a function of the classroom itself. We naturally think of the teacher as the effective influence.

In our preceding chapter we called attention to the existence of extreme differences between schools in the matter of deception. In this chapter we have noted similar differences between classrooms within the *same school* and have attributed this fact to teacher influence or perhaps a classroom morale. We have based our argument, however, on very few cases. We should strengthen it considerably if we could include not only selected rooms but all the rooms tested. This we did, using a statistical method which is too complicated to describe here but which is reported in full in Book Two, Chapter X. By this method we were able to include in our survey of class differences seventy-one rooms in eight schools.

The result of this procedure confirms us in our conclusion that genuine classroom differences are the rule rather than the exception and that these differences are not to be accounted for by such facts as differences in age, intelligence, or home background. Yet they are much too large to be accounted for by chance. In the experimental schools, the differences among classrooms, though smaller than those observed in public schools, are nevertheless genuine. The fact that such differences occur even in schools where conscious effort is made to employ more modern methods lends support to the suggestion that the significant factor is the personal relation of teacher and pupils rather than other elements of technique.

At the beginning of this chapter we drew attention to certain classrooms which were conspicuously more *honest* than their neighbors. So far in our discussion we have not been able to say that such differences have been caused by this or that particular teacher, but only that the teacher-pupil relation has seemed to be of significance. But in testing one of the experimental schools we came upon certain groups which were conspicuous in being more *dishonest*, and it seemed worth while to test this school again after the lapse of one year to see whether these differences could be traced to individual teachers.

The data involved in this last experiment are too extensive and complex to justify more than a brief summary here, but will be found elaborately set forth in Book Two, Chapter X. The two sets of tests enable us to compare five teachers in a progressive school, whom we shall call A, B, C, D, and F. A and B are fifth-grade teachers, C and D are sixth-grade, and F seventh. Pupils pass each year from A to C, from B to D, and the girls of C and D pass to F. From the tables in Book Two it may be seen that teacher B in October, 1925, had in her class about twice as much cheating as any other teacher. There were of course some differences among the other teachers, but none so large as this. But a year later, *i.e.*, in October, 1926, the pupils B then had did not show this exaggerated tendency. This fact led us to question whether the differences found were to be laid at the door of the teacher with whom the pupils were when tested or to the influence of their preceding teacher, especially since in October, when the tests were given, the pupils had been with their teachers less than a month as compared with nine months under the influence of the preceding teachers.

We therefore made another comparison, considering only the pupils for whom we had records for both years. When we tested them the following year (under another teacher), we found that the pupils B had had from October to June, who were so much less honest than the others in 1925, were, in 1926, only half as deceptive as before and were, moreover, the least deceptive of the five groups. In the course of one year, from being the most dishonest group they had become the most honest. Furthermore, in March, 1926, nearly one academic year after the first test, which consisted of the IER material, we happened to give our Speed tests in this school. B's pupils, although they began that academic year by being the most deceptive, had by then become the least deceptive of any.

By all these observed facts we felt confirmed in our assumption that the critical influence had been exerted by the teacher who had had the pupils the previous year and that B's influence was unusually large.

The hypothesis may be entertained, then, that a subtle difference between teachers exists, even when all are working consciously and skillfully along progressive lines, and that this difference is occasionally large enough to account for wide differences in deceptive behavior. In further investigations it should be borne in mind, however, that even here variations in home background and in the character of particular children may account for a particular teacher's success or failure in any given year by introducing thus into any brief record a large element of chance.

CHAPTER XVII

GROUP MORALE

It is reasonable to suppose that the influence of the school and teacher, whether for good or ill, is reflected not only in the immediate acts of the children but also in their growing stock of attitudes and habits. In Chapter XIII we showed how similar children are, merely through classroom association. It is even conceivable that these attitudes and habits, becoming more fixed each year, may in the course of a few school sessions prove stronger than the influence of any but the most able teacher. Furthermore, since each group of pupils passes through experiences which are peculiar to itself, each group may be expected to develop its own characteristic code of conduct. One can see, therefore, the necessity of considering, along with the factor of teacher influence, the accumulated results of the influence of a series of teachers as these are registered in the group code or group morale.

The evidence underlying this phase of our discussion consists of five sets of correlations and their statistical relations. The facts correlated are, for each of the five correlations, two sets of mean deception scores for a number of classrooms. For two correlations we have the mean scores of the same pupils tested twice under the same teacher, in one case with the same test repeated and in the other case with another test. In two correlations we have to do with the same teachers for each set of mean scores, but one set of means is for the pupils these teachers have in one term and the other set of means is for the pupils these same teachers have the next term. As before, the same test is repeated in one case and in the other case a different test is used. The last correlation involves the mean scores of the same groups of pupils when tested under two sets of teachers. For this we have available only the same test repeated. The following scheme will aid in keeping these various relations in mind. After each pair of facts is placed the corresponding coefficient with its probable error.*

TABLE LXII

Correlation of Mean Deception Scores

				r	PE
Same teacher	Same pupils	Same test (Speed repeated)	(1)	.761	.049
		Different test (Speed and Puzzles)	(2)	.257	.104
	Different pupils	Same test (IER repeated)	(3)	.69	.067
		Different test (Arithmetic and Speed)	(4)	.81	.042
Same pupils	Same teacher	Same test	(1)	.761	.049
		Different test	(2)	.257	.104
	Different teacher	Same test (Arithmetic repeated)	(5)	.90	.032
		Different test †			
	Self-correlation of Speed test ‡		(6)	.78	.018
	Self-correlation of IER test ‡		(7)	.75	.024
	r, Speed and Puzzle test		(8)	.31	.027

† Data not available.

‡ By "self-correlation" is meant the correlation between two sets of scores from the same test given to the same pupils on separate occasions, *i.e.*, its reliability.

We shall discuss, first, correlations (1) and (2), where the teachers and groups remain the same for each set of paired facts; second, correlation (5), where the groups remain the same but have one set of teachers for one test and another set for the other; and third, correlations (3) and (4), where the teachers remain the same but have one set of pupils for one test and another set for the other test.

---

* Readers who feel a little at a loss by the frequent use of statistical terms are urged to stop at this point and review briefly the explanations given in Chapter VI in order that the purport of this and of subsequent discussions may be apparent.

First, correlation (1) is about the same as (6) and correlation (2) is about the same as (8). This is what we should expect if the groups did not differ from one another any more than they would just by chance. But we have already shown that they do differ materially from one another, and have suggested that this difference might be due to the distinctive influence of each teacher on her classroom. Let us examine the implications of this likeness between (1) and (6) and between (2) and (8) and see whether we can account for the facts by reference to such teacher influence.

First, it should be borne in mind that any relatively permanent differences among the rooms which tend to make them differ in deceptiveness more than can be attributed to chance would operate to raise the correlation of the group means above that of the self-correlation of the test (or the r between two different tests). Second, any *temporary* influences affecting the rooms unequally, either at the moment of testing or between the tests, would tend to lower the correlation of the means below the self-correlation of the test (or the r between two different tests). Now, inasmuch as the two Speed tests of correlation (1) were given only a week apart and the Speed and Puzzle tests of correlation (2) were given the same day, we can hardly hold the teachers responsible for any group fluctuations which occurred, since they were not in the room at the time of the test and were unaware of its purpose. Hence, since the r's are neither raised nor lowered, we may conclude that there were probably slight differences in the conditions under which the two tests were administered, such as difference in time of day or in the personality of the two examiners, which tended to *lower* the r of the means, but *these influences were apparently offset by some more permanent influence, such as the group morale* (possibly due to the teacher), which tended to *raise* the r of the means.

Correlation (5). Here we have the same test given to the same groups of children on two different occasions, with a change of teachers in the interval. This r should be compared with (7). The fact that (5) greatly exceeds (7) indicates that between the two test occasions nothing happened to the pupils to make any radical changes in their relative deceptiveness. The interval between tests was a year in some cases and a half year in others, which ought to be time enough for the varying influence of the first set of teachers, if it exists, to show itself in the changed behavior of the pupils. We must conclude, then, that so far as these eleven classes compared in correlation (5) are concerned, the teachers all exerted about the same influence, or else that in the year or half-year during which they were in charge of their classes their influence was negligible. This corresponds to what we found in the experimental school, in which one teacher stood out as exceptionally influential. Viewed from another direction, this same fact may be taken as evidence of the existence of a group code or custom which persists as the group advances from room to room.

Correlations (3) and (4). These r's are between the mean scores of *successive* groups of children taught by the *same* teacher. It is the teacher who seems to show a constant influence here. The pupils are quite different in each case, yet in the one case where the same test was repeated, and in the other case where a different test was used, the surprising correlations of .69 and .81 are observed. This would seem to be a contradiction. The situations were as follows. In the case of the smaller r of .69 the IER tests were given first in October, 1925, and repeated a year later, giving the teachers only a month with each set of pupils. In the case of the larger r of .81, the IER tests were given some in November, 1924, and some in February, 1925, while the Speed tests were given respectively in March, 1926, and January, 1926. Thus in the second case the teachers had one set of pupils not less than a half-year and the other set about a month. As a month is rather a short time for the building of stable habits, we must infer that such influence as the teacher has may be exerted at the very beginning of her contact with a class, although the higher r in the second case also suggests that this influence is greater when there is time for it to develop more permanent habits and attitudes in the pupils. So much is fairly clear and reasonable. Our main problem lies in the paradox of having at the same time a high correlation between two testings of the *same* groups when the *teachers* are changed and two testings under the *same* teacher when the *groups* are changed. The first suggests that the dominant fact is the morale or code of the group. The second suggests that after all the teacher is the determining factor, for how otherwise are we to account for the fact that the relative deceptiveness of sixteen classrooms remained so nearly unchanged (*r*, .81) although one of two tests was given to the children who were in these rooms during one term and the other test to the children who happened to be in the same rooms another term? We have more than once brought forward evidence for believing that only in exceptional cases does any one teacher greatly influence a class. If this evidence and the reasoning based on it are sound, to what are we to attribute these correlations between the means of different groups in the same classroom when the classroom is tested twice? The discussion of this last problem concludes what we have to say concerning a possible group code or morale.

In the ordinary school system, a group of children once brought together in a first grade keeps together for a period of years, except for such changes as are due to removals, newcomers, and shifts in grading. Assuming a substantial nucleus moving on from year to year, together, the code or morale of the group may easily become the dominant factor in the behavior of all the children. The facts summarized in correlation (5) point to the existence of some such factor carried on from grade to grade.

A second characteristic of the ordinary school system is that the teachers of grade one, of grade two, of grade three, etc. are arranged rather permanently in vertical sequent groups as illustrated by the following table, in which the teachers are lettered A, B, C, D, etc. and the grades numbered I, II, III, IV, etc.

The scheme is simplified by assuming that each teacher keeps her pupils for a year, when they are advanced to the next grade. Thus the group of children who begin with teacher A go on to teacher B, not to teacher L or T, and those that begin with teacher K move on to teacher L, not to teacher B or T. Each eighth-grade class or seventh-grade class, therefore, can be called not only H's

TEACHERS OF SEQUENT GROUPS

Group 1		Group 2		Group 3	
Teacher	Grade	Teacher	Grade	Teacher	Grade
H	$VIII_1$ *	R	$VIII_2$	Z	$VIII_3$
G	VII_1	Q	VII_2	Y	VII_3
F	VI_1	P	VI_2	X	VI_3
E	V_1	O	V_2	W	V_3
D	IV_1	N	IV_2	V	IV_3
C	III_1	M	III_2	U	III_3
B	II_1	L	II_2	T	II_3
A	I_1	K	I_2	S	I_3

* The arabic figures refer to grade group or section. Thus I_1 is grade I, class 1; I_2 is grade I, class 2; etc. In many schools the different grade groups represent different intelligence levels.

pupils, or R's pupils, but, with equal accuracy, pupils of A, B, C, D, E, F, G, and H or of K, L, M, N, O, P, Q, and R. It is not unreasonable to suppose that each sequent group of teachers has a differential influence on particular classes of children which results, other things being equal, in a characteristic deception tendency for each class at each grade level, through the sequence, and in a characteristic deception tendency for the whole series of classes in the sequent group. Consequently, when the whole school population shifts from one classroom to another at the time of promotion, the relation among the sequent groups is not changed. This is particularly true if the grade groups represent intelligence levels. Of course some children do change from one sequent group to another, but there are not enough such changes to affect the group morale.

Now when we come to correlate the mean scores of the pupils taught by the teachers of, say, grades five and six one year with the mean scores of the pupils taught by these same teachers another year, what we have done (referring to the table) is to compare F's pupils with the pupils taught by E the year before, P's pupils with the pupils taught by O the year before, and W's pupils with the pupils taught by V the year before. We have not compared

E's pupils with the pupils taught by N the year before, nor P's pupils with the pupils taught by W the year before. We have taken each pair of facts to be correlated from within one sequent group. Back of the pupils of teacher E in sequent group 1 are several years of experience which tend to make her classes more like one another than they are like the pupils of sequent group 2, the classes of which have their own differentiating experience. Hence if E's pupils are more honest than O's one year, they are likely to be so the next, not merely because of what influence E exerts in distinction from the influence of O, but also, and perhaps more, because of the accumulated influence of teachers A, B, C, and D, all of whom have taught the two groups whose means are being compared. This resemblance of the members of the several sequent groups is reflected in the correlations of .69 and .81 which are now under discussion. The more sequent groups there are in proportion to the number of grades from which the classes to be compared are drawn, the higher will be the correlation. The twelve classes whose two sets of children are compared for correlation (3), which is .69, are taken from three sequent groups. The sixteen classes represented in correlation (4), which is .81, are drawn from five sequent groups.

The correlation is further augmented by whatever permanent differences there may be among the teachers of any sequence. We have already pointed out that these are occasionally significant. The general progress of the classes in a sequence is arrested or accelerated by these divergent teachers in the same way each year or half-year; but, as we have indicated, this cannot account for the whole of correlations (3) and (4) since, except in extreme cases, these divergences do not measurably affect the behavior of the class.

The sequent group arrangement we have described is of course only schematic and is only approximated in any given case. This only tends to drop the r's between group means below what they might be if the facts corresponded exactly to the table. Such approximations are found where there are several separate school buildings in any system in each of which there is one class to each grade. Under such conditions, there is just one succession of teachers through which the pupils attending each school can pass. It is not surprising, therefore, that schools develop characteristic distinguishing tendencies in honesty as well as in other matters, like the schools described in the previous chapter where we attributed differences in the matter of deception to school morale. Doubtless in such a situation other factors in the school enter into the picture, such as the personality of the principal or the appearance and utility of the building and grounds.

Another type of approximation to the scheme is found in large schools and is illustrated in the table on page 335, where there are several classes to each grade and the pupils are divided into VA1, VA2, VA3, etc., the ones, twos, and threes representing in each case some definite mode of selection. When this selection is by level of intelligence, the children of similar intellectual capacity are kept together year after year and the teachers of VA1, VIB2, IVA3, and all the other groups tend always to teach the " one " group or the " two " group or " three " group respectively each year. Thus we have the equivalent of the sequences found in the separate school buildings. The correlation between intelligence and deception is too low for such differences in intelligence as distinguish the ones, twos, and threes of a system to account for similarity within each such sequent group in the matter of deception. But even if it were possible to account for correlations such as (3) and (4) by means of likenesses and differences in intelligence, the deceptive tendencies would nevertheless be specific, concrete, and separately measurable, constituting a part of the habit system of the members of the class.

So far this habit system characteristic of the group, which we now picture as accumulating from year to year, has been indiscriminately referred to as the group code, custom, or morale. If by " code " is meant a standard consciously adhered to, then the term is probably not appropriate, as there is some evidence * that the

---

* See " Testing the Knowledge of Right and Wrong," sixth article, *Religious Education*, May, 1927, reprinted in " Monograph No. 1 " of the Religious Education Association.

average child behaves and thinks as the group does without much awareness of his own consistency or inconsistency. The term " group morale " is therefore less ambiguous.

SUMMARY

Chapters XV, XVI, and XVII may now be summarized as follows:

1. Schools that we have measured differ in deception from one another in ways that are to be accounted for rather by school atmosphere or morale than by technique or selection of population, although the latter is doubtless in many cases a significant factor.
2. The teachers we have compared differ from one another only slightly in any one school system so far as influence on deception is concerned and only slightly modify the deceptive behavior of their pupils. They are rather part of a system of sequent groups, each such group of classes accumulating its characteristic habits. Occasionally, and in some schools more than in others, teachers diverge enough from their fellows in any sequent system to induce marked changes in their children, which persist into the next room. But this is the exception and not the rule.
3. Class groups differ from one another in deception and tend to maintain these differences from year to year, each class building up a habit system which, without much consciousness on the part of the individual members, operates to differentiate it from other groups.

CHAPTER XVIII

SAMPLE STUDIES OF THE EFFECTS OF MORAL AND RELIGIOUS EDUCATION

The three educational agencies dealt with in this chapter and the next were selected by accident rather than by design. We happened on them in the course of our examination of school children. It is farthest from our thought that the facts reported here should be regarded as in any sense a complete survey of the moral values of these organizations. We dealt in each case with groups too restricted for wide generalization, and even here we limited ourselves to a study of the comparative honesty of the children, ignoring other and doubtless equally important effects. We hold no brief for or against the organizations of which the pupils tested were members. The methods they employ, however, should be a matter of concern to all educators as they are typical of methods used by many agencies which hold themselves responsible for the moral education of children and of many plans which find vogue in our public schools. Yet the negative tenor of the results of this study should make us neither cynical nor pessimistic, but rather cautious and inquisitive. The one thing that stands out is the need for more extensive investigations, by means of objective and standardized techniques, into the social significance of contemporary education.

SYSTEM X

The organization we shall call system X is a device for interesting school children in the achievement of virtues through practice. When we encountered this scheme, each child was expected to keep a daily record of certain good deeds (among which was truth telling); and, to stimulate him in his effort and so make sure that each virtue was properly practiced, he was rewarded for a good record by being advanced in the organization from rank to rank. Obviously a premium was placed on making a good showing. Since the date of our study certain changes have been made which mitigate the evident dangers of this procedure, but it is followed in principle in a variety of moral education plans.

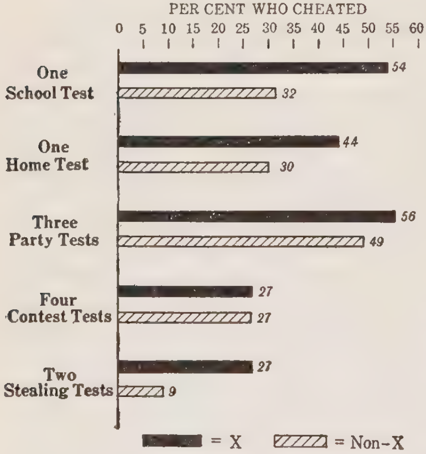


FIGURE 65

Cheating of X and Non-X Boys in School C

This figure reads: 54% of the X boys and 32% of the non-X boys cheated on one of the IER school tests; etc.

In trying out certain of our deception tests in school C we discovered that we had tested certain boys who had had this training. It happened that, in this school, membership in the organization was optional, so that there were several classrooms in which about half the boys had joined and half had not. This gave us an excellent opportunity to compare boys in the same classroom, under the same teacher, with the same intelligence and home background. There were 143 X boys and 126 non-X boys. The results, which are printed fully in Book Two, Chapter XI, are summarized in Figures 65 and 66.

The rather startling contrasts between the X boys and non-X boys pictured in Figures 65 and 66 give one pause. The members of the organization cheated more on every test than the nonmembers except in the case of the athletic contest, in which there was no difference between the two groups. Furthermore, the higher the rank achieved, the greater the deception. It would seem necessary to conclude either that the organization automatically selected for membership the less honest members of the rooms concerned or else made them less honest after they had joined. And concerning the members, what is there to say except either that the satisfactory reports were handed in by the less honest or that the practice of reporting their good deeds made them less honest?

Although these results seemed unfavorable to the method under consideration, the number of cases was too small to warrant the forming of any final conclusions. The principal of this school, moreover, was not in sympathy with the plan and some of the teachers did not enter into it whole-heartedly. Also, the pupils were all boys. Accordingly, at the suggestion of our advisers, we decided to make a more complete study and settle the issues at stake. In doing so it seemed wise to broaden somewhat the scope of the problem.

The procedure under consideration is typical of much formal moral education used to supplement the usual public school curriculum. Some principals lay great stress on these extra-curricular methods, taking advantage of every opportunity to instill moral ideals, point out delinquencies and duties, and reward virtuous behavior. This interest in the characters of their children is often accompanied by warm personal affection for individual pupils and the development of lasting attachments.

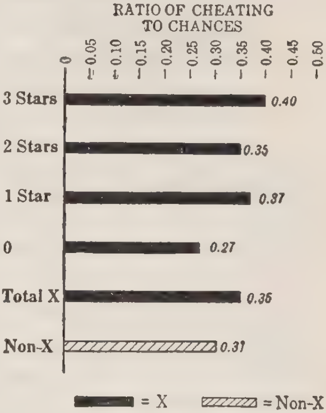


FIGURE 66

Relation of Rank in X to Deception Ratio of Boys in School C

This figure reads: X boys having won three stars cheated 4 times in ten chances; those having won two stars cheated 3.5 times in ten chances; etc.

We were interested in comparing schools which depended upon these extraneous methods for results in character with schools where such added devices were regarded as out of place and which depended on the discipline of the usual school routine for the moral effects expected from the school system.

In a congested metropolitan district we found these conditions rather well realized in schools F, G, H, I, and J of our list in Chapter IV. Although H and I are two schools, each with its own principal, we shall handle them in this study as though they were one. We may therefore reletter our populations as follows:

A. Mixed, through grade six; girls, seven and eight
B. Boys, through six; girls, through eight
C. Girls, through eight
D. Mixed, through six

In school A we found great emphasis on character education. System X, beginning with grade four, had been in use here from its inception three and a half years previously. Pageants by the children were presented from time to time portraying and idealizing certain virtues on which system X laid stress. There were also the Junior Red Cross and the regular opening exercises, the one offering opportunities to engage in acts of usefulness and the other to hear talks that occasionally were directed to the inculcation of ideals. The principal was profoundly interested in her children, who were in turn devoted to her.

In school B not all the pupils above grade three had had system X, and these two groups, the one which had had it and the one which had not, are called respectively Bx and B. The two principals were not so certain of the value of all the extraneous activities used in school A, nor did they maintain the same type of personal intimacy with the pupils characteristic of the principal of A.

Schools C and D did not believe in extra-curricular activities and in particular were not in sympathy with system X.

The children in these four groups were practically all of the same race, the same religion, the same general intelligence, and the same type of home background, as our records quite clearly demonstrate.

The tests used in making our comparisons consisted of the Word Knowledge test, taken at home and indicating the amount of surreptitious use made of a dictionary or other assistance, the Speed tests, and the Coördination tests. As usual, the fourth grade omitted one Speed test and the test done at home. This made eight deception tests for those in the fourth grade and ten for all above the fourth grade. In addition, the Department of Psychology at Teachers College, with our financial assistance, administered the Pintner non-language intelligence test to all our groups, and we gave all above the fourth grade the Sims Score Card* for measuring socio-economic level. The Pintner non-language test was used partly because no one intelligence test had been used with all the schools and partly because many of the children were not very familiar with the English language.

A complete record of the results of this testing for each classroom will be found in Book Two, Chapter XI, together with a number of summary tables, from which we shall quote here and on which we shall base certain figures and conclusions now to be presented.

SUMMARY OF DATA CONCERNING THE RELATIVE DECEPTIVENESS OF SCHOOLS A, B, C, AND D WITH AND WITHOUT SYSTEM X

Our first comparison is between the groups having system X, *viz.*, A and part of B, and the groups which had not had X, *viz.*, part of B and all of C and D. But the variation in ages among the groups suggested the need of matching them in this particular and for home background and intelligence as well. Table LXIII gives the mean scores in these respects for the populations concerned.

The slight correlation between age and deception is cared for by matching the groups for age. Even if they were not also matched for intelligence and home background, it would not affect our comparisons, as no correlation was found between the intelligence scores or home background scores and deception. Any differences found in deception are therefore due to other factors than age, IQ, or home background. These deception differences are summarized

---

* See Chapter VIII for a description of this instrument.

TABLE LXIII

Mean Ages, Sims Scores, and IQ's of X and Non-X Groups Matched in Age

	Ax	Bx	B	C–D
Number of cases	570	327	95	465
Chronological age	12/5	12/3	12/5	12/6
Home background	8.95	9.18	8.97	9.07
IQ	102	*	*	100

* The intelligence scores for B were not available when the schools were matched for age. However, the comparison of groups indicates that there would be no significant variation from the other schools, and in any case the low correlations would make variation of no consequence.

in Table LXIV. The deception ratio was found, as previously described, by dividing the number of c's by the number of chances to deceive and stating the result as a percentage of cheating to opportunity. The cheating on the home test is shown by the per cent of the group taking advantage of the opportunity this offered.

TABLE LXIV

Deception Scores of X and Non-X Groups

	Ax	Bx	B	C–D
Number of cases	570	327	95	465
Mean deception ratio	.46	.52	.59	.70
Per cent cheating on home test	37	46	51	51

At first sight the X groups seem to have the advantage over the non-X groups, for their deception scores on both the school tests and the home test are lower than those of the non-X children.

When groups are matched for age, however, certain essential influences are confused owing to the varying grade groupings in the schools and the necessary omission of a large number of cases. A detailed comparison, grade for grade, is therefore more illuminating. From the tables of Book Two, which give these comparisons, the charts which follow have been made.

From the tables of Book Two and these charts we may observe the following facts concerning the 2300 pupils whose records were usable:

1. On the test taken home there are no significant differences between X and non-X pupils. School Ax is slightly better than the others, however. See Figure 67.

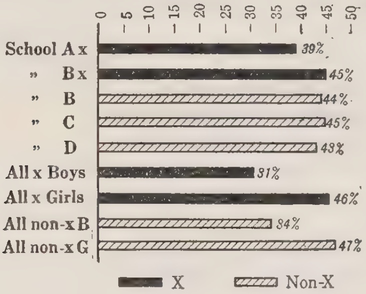


FIGURE 67

Per Cent of X and Non-X Children Cheating on Home Test

2. In the classroom, the X boys and non-X boys are alike in deception, each group cheating on the average 4.74 times in ten chances. But the X girls have a deception ratio of .442 as against a ratio of .590 for the non-X girls. See Figure 68.

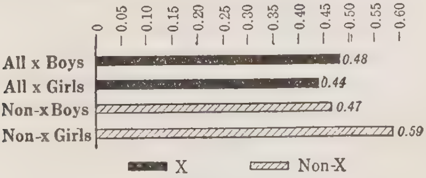


FIGURE 68

CT Ratios of X and Non-X Children, by Sex

So much for the X and non-X groups as a whole. Certain grade comparisons are also instructive.

3. In all the schools, the seventh and eighth grades, which contain only girls, are more deceptive than the girls of the lower grades. See Figure 69.
4. In school B, the Bx boys of grades five and six are more deceptive than the non-X boys of the same grades, having a mean score of .627 as against .530. But in the seventh- and eighth-grade girls' classes, the X girls prove far less deceptive than the non-X, having a mean score of .494 as against a non-X score of .629. See Figure 70.

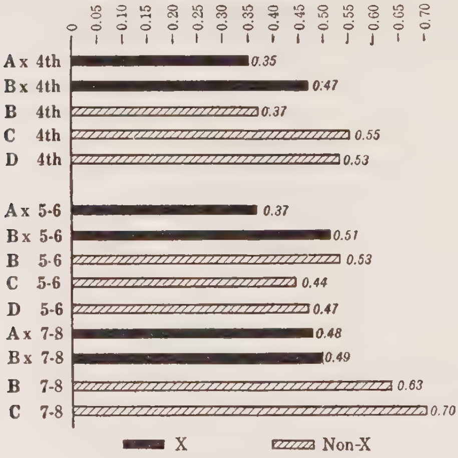


FIGURE 69

CT Ratios of X and Non-X Children, by Grade

The conclusions so far outlined concern the contrasts between the pupils of system X and those who are not members of this organization. The element of time during which pupils have been under the influence of the organization may be an important item, as is suggested by the following facts:

5. In schools Ax, Bx, and B, the fifth and sixth grades are *more* deceptive than the fourth; but in schools C and D, where system X has not been in force, the fifth and sixth grades are *less* deceptive than the fourth. See Figure 69. Fur-

thermore, in schools Ax and Bx the lower fourth-grade, or 4A, children, who had been in the system less than six weeks when the tests were given, show up better than the upper half, or 4B, pupils, who had had the training for over a term. This fact must be taken with caution, however, for it is also true of grades 4A and 4B of school C, though not of school D. See Figure 71.

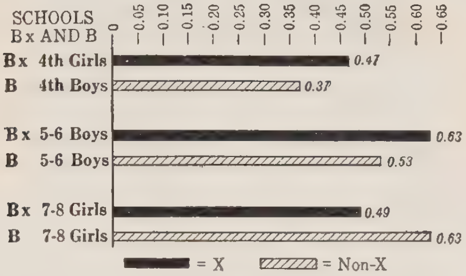


FIGURE 70

CT Ratios of X and Non-X Children, by Grade and Sex

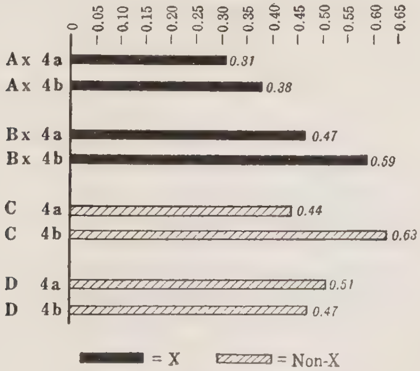


FIGURE 71

CT Ratios of Grade Four

6. In school Ax and Bx those pupils entering above the fourth grade in September, 1926, a month before the tests were given, are less deceptive on the home test than those who

have been in the school several terms, and the per cent cheating increases with the number of terms. When *all* tests are considered, this is true only of school Bx, however. See Figures 72, 73, and 74.

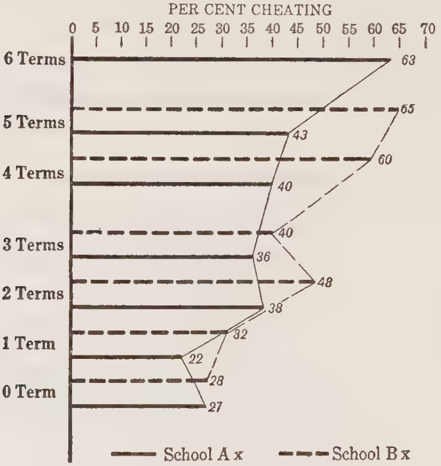


FIGURE 72

Relation of Cheating on Home Test to Length of Membership in X

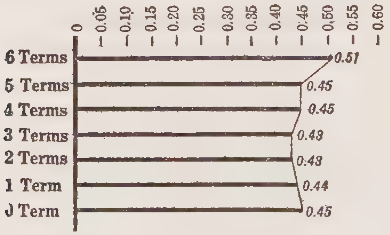


FIGURE 73

Relation of Cheating on All Tests (CT Ratio) to Length of Membership in X, School Ax

7. Even when grades five to six and seven to eight are handled independently, there is a positive correlation between length of time in the organization and amount of deception.

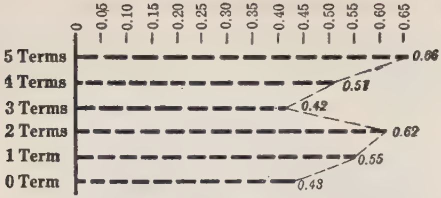


FIGURE 74

Relation of Cheating on All Tests (CT Ratio) to Length of Membership in X, School Bx

Greater deception, however, is associated not only with longer experience of the organization but also with rise in rank and rate of progress, as the following statements testify:

8. In agreement with the results reported on the first school tested, there is a positive correlation between the rank attained and the tendency to deceive on our tests. The higher the pupils of schools Ax and Bx go in the system, the more they cheat, up to a certain rank, beyond which there is improvement in school Ax. This is true, on the whole, even when grade level is kept constant. See Figures 75 to 77.

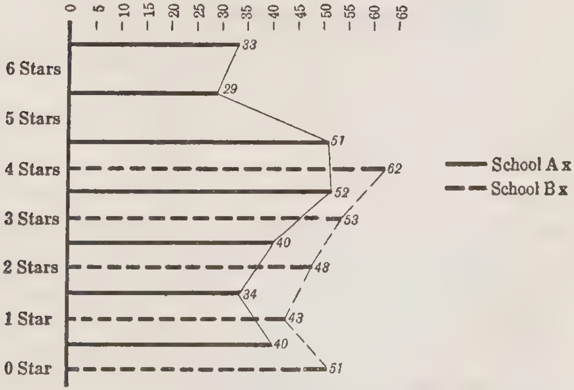


FIGURE 75

Relation of Per Cent Cheating on Home Test to Rank Achieved in X

9. In schools Ax and Bx there is also a definite relation between rate of progress and deception. The average progress is one button or rank a term. Those that move along at this rate cheat the least. Those who move up more rapidly and get more than one button a term and those who move slowly and get less than a button a term cheat the most. This is true not only of the school tests but also of the test taken home. See Figures 78 and 79.

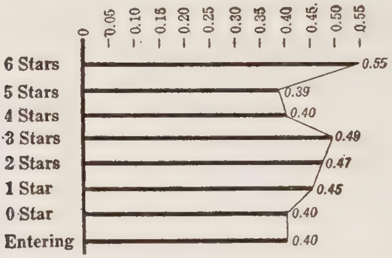


FIGURE 76

Relation of Cheating on All Tests (CT Ratio) to Rank Achieved in X, School Ax

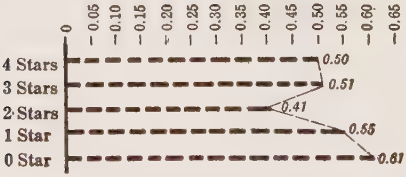


FIGURE 77

Relation of Cheating (CT Ratio) to Rank Achieved in X, School Bx

10. Those who have been in the system a term or more and yet have achieved no buttons are more deceptive than those who have obtained one rank. Presumably they are not interested. But those who have obtained three or four ranks are quite as deceptive as those who have done nothing. This is hardly lack of interest. See Figures 78 and 79.

There remain certain comparisons between the schools that are of interest.

11. When both sexes are included, school Ax stands best, with an average cheating score of 4.17 times in ten chances. School D is next, with a CT ratio of .491, Bx next, with .501, and schools B (those of B not members of X) and C follow with scores of .551 and .608 respectively. See Figure 80.

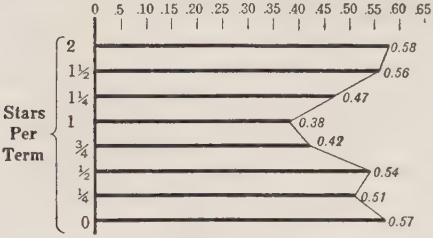


FIGURE 78

Relation of Cheating on All Tests (CT Ratio) to Rate of Advancement in X, Schools Ax and Bx Combined

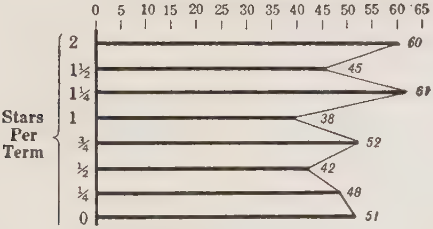


FIGURE 79

Relation of Per Cent Cheating on Home Test to Rate of Advancement in X

12. In all the schools, including Ax, the correlation between length of time in school and cheating is zero.
13. Taking the records class by class, there is considerable overlapping among the schools, though schools Ax and Bx

show a wider range in deceptiveness from class to class than do schools C and D.

Schools B and C are inferior to Ax and Bx primarily in grades seven and eight, not in grades four, five, and six, which in all schools are less deceptive than seven and eight, as noted in No. 3.

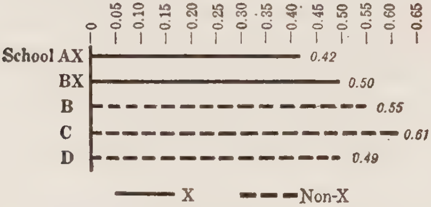


FIGURE 80

Mean CT Ratios of Schools Ax, Bx, B, C, and D

INTERPRETATION OF FACTS REPORTED FOR SCHOOLS A, B, C, AND D AND SYSTEM X

Let us first state the essential facts in order.

1. On the test taken home there is no difference between the X and non-X children. This is the test which most nearly corresponds to the situation of the organization itself, which requires the checking of good deeds done at home.
2. On the school tests, the boys of X are no less deceptive than the boys not in X, but the X girls are less deceptive than the non-X girls.
3. School A, with system X, is less deceptive than the others on all the tests, including the one taken home; and the girls of school Bx are less deceptive than those of B, C, or D on the school tests, but not on the test taken home.

The facts to be accounted for are the relative honesty of all of school A and of the girls of school Bx. Is system X responsible for this state of affairs? Certainly it does not work in that way with boys. If the causal factor in the case of the girls is system X, then how account for the contradictory facts that the longer they are in the organization, the higher their rank, and the more rapidly they advance, the more they cheat? We can only conclude that it is not the system which is responsible for this greater degree of honesty among the X girls.

The contrary is not necessarily true, however, as was suggested in our discussion of the results of the first school in which the X and non-X pupils were compared. We stated there that it was not clear whether the organization merely selects for advancement those most proficient in subterfuge or makes them more facile liars.

Let us call these two proposals the " selection " hypothesis and the " influence " hypothesis and state the arguments pro and con.

Pro. It is true, says the selection theory, that the more successful pretenders are advanced in rank irregularly, but those who advance normally, at the rate of a rank a term, are among the most honest of the whole population.

Con. True, but of the " rate of progress " groups shown in Figure 78, five out of seven of those which are advancing either too fast or too slowly are more deceptive than school D, which has had no X, and these five groups contain 77% of all the X pupils.

Pro. It will have to be admitted that a large majority of the X pupils are more deceptive than they would have been if they had gone to school D, but in comparison with school C they are much *less* deceptive, for none of these " rate of progress " groups has a mean score as large as that of school C.

Con. But school C is all girls and contains the seventh- and eighth-grade classes who were the most deceptive groups we found. It may be admitted that the X pupils are not as deceptive as they would have been if they had all been girls in the seventh and eighth grades of school C, yet it remains true that only a few are better than other non-X groups and the bulk of them grow more deceptive the longer they are in the organization. Consequently, even if it is admitted that for the 23% who advance normally the organization is of value (though it may quite properly be claimed that these children were honest to start with and followed the plan conscientiously), nevertheless for the remaining 77% it looks bad.

Pro. But if the organization is not improving its members, how account for the fact that those just entering it in school Bx are so much less honest than those who have been in it some time?

Con. There seems to be no obvious explanation of this fact, but over against it should be set the still more startling one that, in the school which is claimed to be the outstanding representative of the system, those just entering above the fourth grade who have had the system for less than six weeks are *less* deceptive than those who have been in it for several terms. And also, when the cases of X are lumped together, as has been noted, there is a positive correlation between length of membership and cheating. . . .

While the case is not settled, the arguments seem to favor the " influence " hypothesis. It is quite likely that both selection and training are at work to produce the results observed.

Another fact of interest concerns the superiority of school A. We have mentioned the interest of this school in moral education and the character of the principal. It is rather remarkable that the children in this school do not become more honest the longer they stay. But they do not. Yet they show up more favorably than the members of the other schools. Also, as we have seen, those just entering are less deceptive than those who have been there a few terms. Apparently what influence for good the school exerts makes itself felt when the pupils first enter the school, for they come from the very same neighborhood and the same type of homes as do those who belong to the other schools tested. There is, furthermore, small difference in the matter of deception at home. But in school the pupils apparently meet at the very beginning of their career a type of attitude and interest which makes deception less attractive. This influence is not universal, however, and doubtless the principal has not been able to surround herself with teachers all of whom show the same interest in the moral welfare of the children as she does herself. Actually, the fact that the pupils do not become increasingly honest under this favorable régime may possibly be due to the hampering influence of system X, through which a premium is put on a certain kind of falsification. If it had not been for that particular feature of X, now happily discarded, which made advancement depend on the pupil's own unchecked report as to his daily conduct, school A might well have shown even less deception than it did.

In other respects than honesty system X may of course have been making genuinely helpful contributions to the character of the pupils. The moral of the tale is that these other presumed effects should also be measured.

CHAPTER XIX

SAMPLE STUDIES OF THE EFFECTS OF MORAL AND RELIGIOUS EDUCATION (*Continued*)

The organization which engaged our attention in the preceding chapter is confined to public schools. It is almost exclusively concerned with the conscious acquisition of good traits. The names and descriptions of traits are learned, historic and legendary characters possessing the traits are talked about, and the members are supposed to perform daily a series of specified acts in order that the traits may become habits.

There are several organizations or schemes similarly devoted to the direct and conscious development of traits, which have found their way into the schools of this or that city or state. In general procedure they are not unlike the average Sunday school except that the latter has for the most part confined itself to such illustrations of traits as could be drawn from Biblical heroes and heroines and Biblical situations. This is particularly true of Protestant Christian schools. In view of the large numbers of children in attendance at these schools and the serious interest of their leaders in the effects of the teaching on character, the relation of Sunday schools to deception may be of interest.

In system X, the tests for deception were given in the same rooms where the ethical instruction took place. In the case of the Sunday schools, however, the ethical instruction was in one place with one group of children and the deception tests were given in another place (the day school) with the children in quite different groups. We could hardly expect, therefore, that the results of the teaching in Sunday schools would have an effect on the deception scores at all comparable to that of system X. The facts are as follows.

SUNDAY-SCHOOL TEACHING AND DAY-SCHOOL CONDUCT

In school system A we found Sunday-school records for the children attending four out of the six public schools in the community. One of these two missing schools is near the town limit and only one of its pupils apparently was enrolled in any of the town Sunday schools. In the other, only a dozen pupils attended Sunday schools from which we could secure a record, and these were therefore left out of the computations which follow.

The population of the remaining four schools was distributed among the various religious groups as follows:

Church	Number		Per Cent	
Protestant (enrolled)	217		38.5	
Protestant (not enrolled)	76		13.5	
Total Protestant		293		52
Catholic	140		25	
Jewish	48		8.5	
No church	82		14.5	
Total non-Protestant		270		48
Total not enrolled in Protestant schools		346		61.5
Total cases		563		100

Nearly a fourth of those who said that they went to a Protestant Sunday school were not found on any Sunday-school roll. Some of these may, of course, have gone to schools outside the town, particularly if they lived on the outskirts. But there are 217 whose deceptive behavior may be compared with that of Protestants not enrolled in Sunday school and with the remainder of the community. Table LXV gives these comparisons in terms of the per cent cheating at least once in school and the per cent cheating on the test taken home.

It is of interest that the Protestants not enrolled are slightly less deceptive than the Protestants enrolled, though the difference is too small to be reliable in view of the number of cases. The difference of nine per cent, however, in favor of the Protestants enrolled as compared with *all* not enrolled in the Protestant schools is 2.2 times its unreliability in the case of the school tests. In the case of the home test those not enrolled have an insignificant advantage over those enrolled.

TABLE LXV

RELATIVE DECEPTIVENESS OF SUNDAY-SCHOOL CHILDREN, GRADES FIVE TO EIGHT, SCHOOL SYSTEM A

	PER CENT CHEATING AT SCHOOL	PER CENT CHEATING AT HOME
All the children of the four public schools	36	28
Protestant children enrolled in Sunday school	31	29
Protestant children not enrolled in Sunday school	29	18
All not enrolled in Protestant Sunday schools	40	27

In school system B the school population is nominally about 90% Protestant, but the names of only 417 out of 945 were found on Sunday-school rolls. The comparative deceptiveness of those enrolled and those not enrolled in Sunday schools for this system is shown in Table LXVI.

TABLE LXVI

RELATIVE DECEPTIVENESS OF SUNDAY-SCHOOL CHILDREN, GRADES FIVE TO TEN, SCHOOL SYSTEM B

	PER CENT CHEATING IN SCHOOL	PER CENT CHEATING AT HOME
Whole population	41	36
Sunday-school population	38	38
Non-Sunday-school population	43	34

The percentages are again closely alike, with the Sunday-school children having slightly the advantage in school and slightly the disadvantage at home.

Apparently, then, the tendency to deceive is about as prevalent among those enrolled in Sunday school as it is among those who are not in one community, and in another those enrolled are less deceptive than those not enrolled. This does not mean, however, that Sunday-school children are all alike. On the contrary there are wide differences among them. It is important to know whether such differences are at all attributable to the length of time the children have been associated with Sunday school or to the regularity of their attendance.

Unfortunately we were able to secure a record of attendance for a period of years for only one school, and here for only 52 pupils who were tested for deception in school and only 46 who took the home test. These children range in length of membership in this school from one to twelve years. The correlation between years of attendance and both school cheating and cheating on the test taken home is zero.

For the year 1924 to 1925 we have more adequate records, giving the number of absences for 204 children in several schools of Protestant denominations. The correlation between deception and regularity of attendance expressed in per cent of Sundays attended during 1924–25 is zero. This fact is more graphically portrayed by dividing the Sunday-school population into three groups — (1) those who attended regularly; (2) those who attended from 75% to 99% of the time; and (3) those who attended less than 75% of the time — and noting the median amount of cheating at school and on the test taken home for each of these three groups. These comparisons are made in Table LXVII.

Furthermore, the mean per cent of attendance of those who cheated once was exactly the same as the mean attendance of those who did not cheat at all.

Too much weight should not be attached to these facts, however, not only because of the small number of cases included, but also for two other reasons. In the first place, the forty Sunday-

TABLE LXVII

MEDIAN CHEATING SCORES OF 204 PROTESTANT SUNDAY-SCHOOL CHILDREN

	SCHOOL Xi	HOME Xi
Perfect attendance	– 1.2	– 1.0
75% to 99%	– 1.8	– 1.0
0 to 74%	– 1.2	– 1.3

school periods represented cover a great deal of ground, in the course of which the problem of honesty is touched very little if at all. In the second place, the average attendance of these 204 children was 90%, which allowed for too little variation in attendance to bring out such differences in the effect of Sunday-school teaching as might have been present. Yet so far as the facts go, we may say that neither the length of time that children are associated with Sunday school nor the regularity of their attendance seems to be at all associated with their tendency to deceive either at school or on work taken home.

HEBREW-SCHOOL TEACHING AND DAY-SCHOOL CONDUCT *

What we have just been saying refers only to Protestant Sunday schools. In certain centers the Jews maintain religious schools which meet during the week as well as on Sunday and which are therefore a little closer to the day school both in the amount of time given to instruction and in the way this time is distributed through the week. In five of our schools we asked the pupils, practically all of whom were Jews, whether they attended religious school and if so to give the name of the school. In case they had religious instruction at home, the name of the instructor was asked. In this way we secured the religious school record of 1871 children,

---

* We are indebted to Dr. J. Maller, a graduate student at Teachers College, Columbia University, for the assembling of the data on Hebrew schools.

of whom 714, or 38%, were receiving some sort of religious instruction. These pupils were in grades five to eight; 56% of them were girls and 44% boys.

We had given from eight to ten deception tests here and had computed the CT ratios showing the number of times each child cheated out of ten chances. Table LXVIII gives the essential comparisons.

TABLE LXVIII

Relative Deceptiveness of Hebrew-School Children, Grades Five to Eight

	Mean	SD
All children	.499	.112
Children receiving religious instruction	.485	.145
Children receiving no religious instruction	.502	

Although such difference as appears is in favor of the religious group, the chances are about even that as great a difference would be found between two groups chosen at random from the same population. It should be noted, however, that a similar slight difference in favor of the children receiving religious instruction occurs in *each of four* schools, two of these being for girls only. In the fifth school, for boys only, the difference favors the non-religious group.

From the children reporting attendance upon religious instruction, 151 cases who gave the name of their religious school were selected and followed up to determine the length of their association with religious schools. The correlation between length of attendance and CT ratio is $+.128 \pm .05$. With chronological age kept constant, the partial r between attendance and deception is $+.074$, *i.e.*, there is no relation between the two.*

---

* In *Shebile Hachinuch* for February, 1928, Dr. Maller reports further that the 151 children attended four different Hebrew schools. The length of attendance of each child from the day of admission to the day of the honesty

The results of this study of Hebrew schools are thus in general accord with what we have already reported for Protestant Sunday schools.

SYSTEM Y

In quite distinct contrast with the type of theory and practice represented in system X and in the average religious school is the typical recreational organization which attempts to occupy a boy's or girl's leisure time in ways which are interesting, wholesome, and of significance for the formation of character. Camp craft and

test was established. The following table shows the mean CT ratio for the children of each of the four groups, the mean length of attendance of each of the four groups, and the correlation between length of attendance and the CT ratio for the children of each group.

Schools:	JC N = 28	DT N = 44	ZT N = 44	OT N = 35
CT ratio, mean	.56	.46	.43	.39
Length of attendance, mean	17	24	31	34
r_{CA}	− .20	+.19	+ .24	−.27

It is noteworthy that there is a perfect negative relationship between means of length of attendance and means of CT, that is, the group which has a record of longest attendance in religious school shows the lowest CT ratio and the group having the record of shortest length of attendance has the highest CT ratio. Thus, while within a given group the relationship between religious training and honesty is quite indefinite, still when means of groups are compared such relationship becomes overt. It indicates that length of attendance generally tends to increase *honest* behavior.

A comparison of the four correlations shows that schools *differ* radically with regard to the relation between length of attendance and honesty, the difference being from a correlation of − .27 to a correlation of + .24. While a longer stay in one school tends to make the children less deceptive (− .27), in another school prolonged attendance results in greater deceptiveness. The mean CT ratio for all the 723 children who reported receiving religious training was .485. The mean CT of these 151 children who reported the names of the religious school is .460. The mean of the rest of the religious groups (those who received religious training outside of any religious school) is .493.

civic activities make up the bulk of the program of these organizations, which differ widely in the type of symbolism employed in the formulation of ideals and the planning of ceremonies. The lore of the Indian, the pioneer, and the knight is variously used, now and then with emotional power and literary beauty. In the following characteristics, the organization we shall now discuss, which we shall call system Y, is much like many others.

1. It has a high standard of leadership, but is obliged to depend on local volunteers, who naturally differ widely among themselves in ability and training.
2. It publishes a manual and sundry books and pamphlets.
3. It reaches chiefly middle-class children.
4. It defines quite specifically what it expects of members and requires that before joining the organization they shall promise to obey certain rules and observe certain principles of behavior, among which honesty is quite prominent.
5. Good standing depends on good behavior, and progress depends on the achievement of specific skills and information. The fact of good behavior is determined partly by observation and partly by the member's own unverified report of himself. The other skills and information are treated more objectively, so that it is easier to maintain standards of success here than in that part of the program which has for its purpose the development of character.

As in the case of system X we came on the work of this organization in the course of our testing and found it interesting to compare members with non-members, and as before the results were so important as to justify further investigation.

In the material which follows only boys are included. In school C, which consisted mostly of boys in the grades we worked with, we found that many of the pupils belonged to system Y; so we were able to compare their tendency to deceive with that of the whole school. This comparison is shown in two respects in Figure 81.

From this we see that the 92 Y's cheated somewhat more than the average on the tests done at home, but somewhat less on the tests done in school.

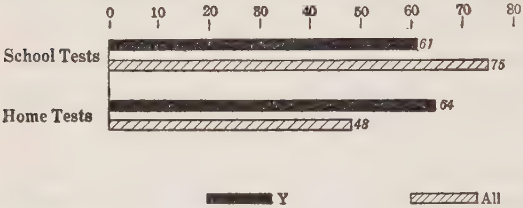


FIGURE 81

Per Cent of Y's Cheating on School and Home Tests, as Compared with Whole Population of School C

In a suburban community (A) we found the facts presented in Figure 82.

In spite of the fact that these 72 Y's in population A had higher IQ's and a better home background than the average, they nevertheless cheated more than the average both in school and at home.

It was these initial findings which led us to seek more cases. These we found in a much larger suburb than the previous one. They were members of school E, a junior high school consisting mostly of girls, but with 150 boys who were members of Y and 180 who did not belong to any similar organization. We first selected from these two groups such cases as would match in age and IQ. The cheating scores of Y's and non-Y's are shown in Figure 83.

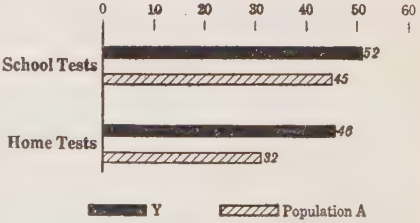


FIGURE 82

Per Cent of Y's Cheating on School and Home Tests, as Compared with Whole of Population A

The cheating means of the Y's turn out to be lower than those of the non-Y's, but in the case of the Speed tests the difference would have to be twice as great as it is to be statistically reliable, that is, to be certainly more than a chance difference; and in the case of the Coördination tests the difference would have to be seven times as great as it is for one to be sure that it was not due to chance.

Figures 84, 85, 86, and 87 show the same and other facts about the Y's, those belonging to other organizations than Y, and those belonging to no organization at all, when no effort is made to match the groups for age or IQ. Tables CLX to CLXIV, Book Two, give the basic data.

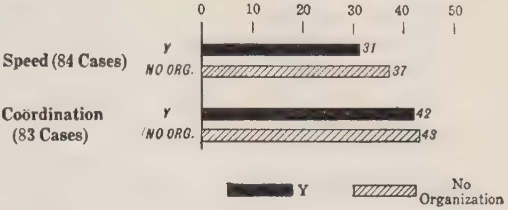


FIGURE 83

Raw Deception Scores of Boys Belonging to Y and to No Organization

The results displayed in Figures 84, 85, 86, and 87 may be summarized as follows:

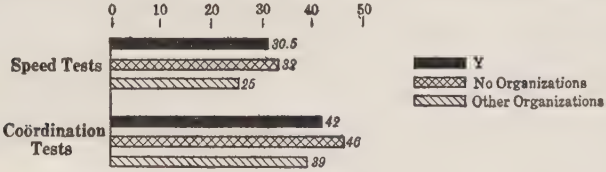


FIGURE 84

Deception Scores of Y's, Members of No Organization, and Members of Organizations Other than Y (Means of Raw Scores)

Comparing all Y's (150) with members of other organizations (22) and with all not belonging to any (180), we find no significant differences in IQ, CA, or deception. There is a tendency for the Y's to be older and more intelligent than those not belonging to any organizations, but the differences could be accounted for by chance.

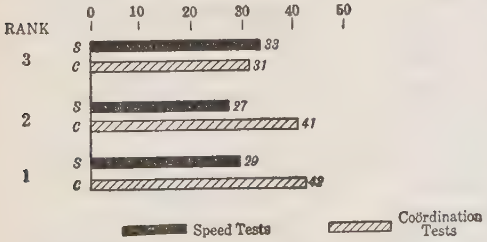


FIGURE 85

Deception and Rank in Y (Means of Raw Scores)

The small group of 22 who belong to various organizations not Y's are not significantly less deceptive than the average of all the boys taken together, but their difference from the average of all boys is, in terms of the standard error of the differences, ten times as great as in the case of the Y's (.16 for Y's and 1.65 for other organizations).

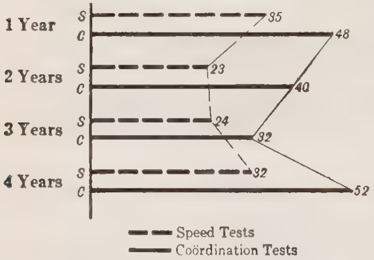


FIGURE 86

Deception and Length of Membership in Y (Means of Raw Scores)

There are twelve groups containing enough Y's to make some comparison with those not belonging to any organization. The median number of times the Y's and non-Y's cheated is the same in seven of these twelve groups. In three the median for the Y's is higher (more cheating) than the non-Y's, and in two groups the median for the Y's is lower (less cheating) than for the non-Y's.

Apparently in this particular situation the Y's show only the slightest difference from the group as a whole, standing midway between those not belonging to any organization and those belonging to other organizations.

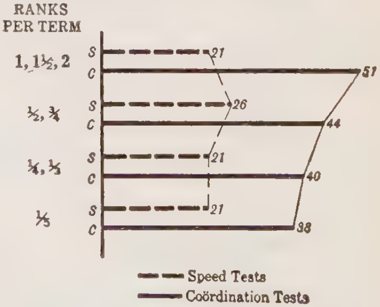


FIGURE 87

Deception and Rate of Advancement in Y (Medians of Raw Scores)

In this school there are no statistically reliable differences between those who have achieved different ranks or who have been members of the organization for different lengths of time. Yet such differences as are found are of interest. In one test those of higher rank are less deceptive, and in another test those of lower rank are less deceptive. Those who move up faster in rank cheat more than those who progress slowly. In two types of tests those just entering the organization and those who have been members for four years or more are more deceptive than those who have been members for two or three years. As the four-year groups are over age (this being a junior high school) they may be expected to be more deceptive than the others. Omitting this group, the rest show, on the average, an increase in honesty with length of attendance.

The numbers on which these three studies of system Y have been based are of course too small to warrant broad generalizations concerning the organization as a whole; and its sponsors, moreover, say that it is not at its best in the communities from which our cases come. We can only conclude that in these places this widely used agency for moral education, whatever its effect may be elsewhere, is either neutral or deleterious with regard to one of its major aims, the teaching of honesty. This conclusion must be at once supplemented, however, for system Y as for system X and the religious schools, by the caution that in other ways it may be having a vast influence for good. But with Y as with X and the rest, these other objectives also must some day pass through the refining fire of scientific measurement.

CHAPTER XX

EXPERIMENTAL EFFORTS TO TEACH HONESTY

We have not as yet undertaken any experiment in the teaching of honesty. In several instances, however, we have coöperated with others who wished to do so by furnishing tests in order that they might be able to measure their results. Two such experiments have been reported to us which, though too brief and incomplete to be conclusive, are nevertheless of considerable interest.

For the first experiment and its measurement Professor W. C. Trow of the University of Michigan is responsible. He very kindly offered to coöperate with us in the conduct of an experiment and to administer and score the tests. Neither the teaching nor the testing, however, was done under his own supervision.

The six junior high school groups used for the experiment were selected with a view to equivalence in sex, age, and intelligence. A ninth-grade civics class consisting of both boys and girls, a seventh-grade home room of boys, and an eighth-grade home room of girls were each given fifteen minutes of daily instruction for three weeks in *The Honesty Book.** The lessons consist of interesting stories of honest and dishonest behavior and discussions of the problem of honesty as it appears in various life situations. For such direct teaching the material offered seemed the best available.† The other three classes, which served as "controls," were another ninth-grade civics class of boys and girls, a seventh-grade class of girls, and an eighth-grade class of boys. To each of these six classes were given the Sims Score Card and the Speed and Coördination tests. The deception tests were given just before the three weeks of intensive teaching began and again just after it was completed. It was expected that the effectiveness of the teaching would be shown by comparing the change that had taken place by the end of the three weeks in the experimental groups (those subjected to the teaching) with the change that had taken place in the control groups (those which had *not* had the teaching).

---

* W. B. Forbush, published by the National Honesty Bureau, 115 Broadway, New York City.

† The book contains also some helpful suggestions about using ordinary school situations for gaining experience in the practice of honesty.

Intelligence scores (Terman group test) and of course chronological ages were available. There was no significant difference between the experimental and control groups in age or Sims score (socio-economic level). The difference in IQ, however, was two and a half times its unreliability, the experimental groups being as a whole more intelligent than the control groups.

The results of the experiment may be summarized* as follows:

On the Speed tests both the experimental and control groups were very honest as compared with populations previously tested, so that there was little room for improvement in any case. The Coördination tests, however, showed mean deception scores of about −2.0 Xi, which, though smaller than we found in even the more honest groups in other places, was nevertheless large enough to allow for considerable change in the direction of honesty. Figures 88 and 89 show what change there actually was.

Figure 88 shows that in the case of the Coördination tests all groups except the first experimental group were slightly more deceptive after the training than before. The first experimental group changed insignificantly for the better. When combined, the three experimental groups show a slight loss in honesty, and the control groups a somewhat greater loss in honesty.

The facts for the Speed test are somewhat different. Here all experimental groups were less deceptive after the three weeks of training. But so also were two of the *control* groups, and the one that was more deceptive at the end of the period was only insignificantly so. We might be inclined to attribute to the effects of the teaching the change shown by the three groups that had the training were it not for the fact that the second control group changed almost as significantly as its experimental counterpart and the third control group changed even more than the third experimental group in the direction of honest performance. Certainly it was not the teaching that made these two control groups improve, *for they had had none.* Consequently it is hardly reasonable to attribute the change in the experimental groups to the influence of the course on honesty.*

---

* See tables in Chapter XI of Book Two.

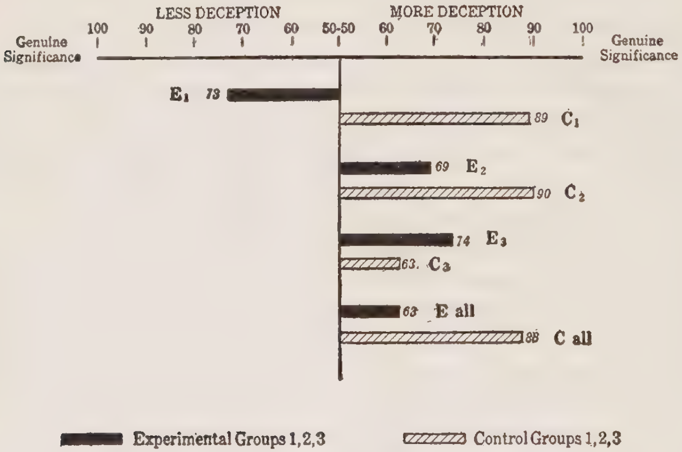


FIGURE 88

CHANGES IN COÖRDINATION TEST SCORES DURING THREE WEEKS' INTENSIVE TEACHING OF HONESTY, POPULATION N

The length of the bars as compared with the long lines at the top shows the probability that the differences are reliable. The center represents an even or fifty-fifty chance.

So far as our results go, the particular method of teaching honesty employed in this experiment for fifteen consecutive school periods of fifteen minutes each did not make the pupils concerned less inclined than they already were to falsify their records in order to improve their scores. This does not mean that individual pupils may not have been benefited by the teaching, but that such benefits, if any, were confined to very few or were so restricted in character as to make no difference in the classroom behavior of most of the children.*

---

* As a matter of fact, the mean changes represented for the groups rather a loss of interest than an increase of honesty as they occurred within the limits of honest variability.

The second experiment we shall report was conducted by Dr. J. Maller, a graduate student at Teachers College, Columbia University. His purpose was to find what effect the mention of God in connection with a test would have on the honesty of children. The idea of God was introduced by the statement: God loves an honest man. But the ideas of God and honesty are here used in

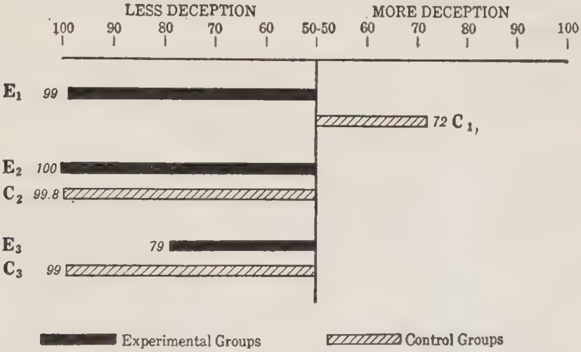


FIGURE 89

Changes in Speed Test Scores during Three Weeks' Intensive Teaching of Honesty, Population N

The length of the bars as compared with the long lines at the top shows the probability that the differences are reliable. The center represents an even or fifty-fifty chance.

---

* These same children were also given a test of moral knowledge both before and after the period of training. There was no change in the mean score in the case of either the three experimental groups or the three control groups. The tests are described in a monograph by the authors called "Testing the Knowledge of Right and Wrong," published by the Religious Education Association, 308 N. Michigan Ave., Chicago, Ill. As the items range over a wide territory of social situations, it is not surprising that the teaching in regard to honesty had no effect on the scores.

conjunction, so that it was necessary to determine the effect of the idea of honesty when the idea of God was not associated with it. This was accomplished by using first the statement: Honesty is the best policy.

The Speed tests were used for measuring deceptiveness. As there are six of these, they could be treated in three groups of two each. First of all, the entire six were administered as usual for the two practice trials, which were then collected. Then when the last trial was given, which the pupils were to score, the procedure was as follows:

1. Tests 1 and 2 were given and scored without comment, so that whatever deception occurred was without reference to the two ideas to be introduced.
2. Before beginning test 3 the examiner wrote on the board, " Honesty is the best policy," and then administered tests 3 and 4, after which he erased the words and left the room.
3. Before the fifth test he wrote, " God loves an honest man," and then, having given tests 5 and 6, he erased the phrase and left the room. There was thus introduced into the situation not only the stimulus of the words which theoretically would operate to lessen cheating, but also the additional time and the factor of having the examiner leave the room for a moment, which theoretically would operate to increase cheating.

This plan was followed with three groups of children, two of them being classes in Hebrew schools and one being a public school class consisting in part of children attending religious school during the week and in part of children without such training. The facts are summarized in Table LXIX, which gives the mean deception score for each of the three pairs of tests, the SD of the distribution and the SD or unreliability of the mean, and the number of cases.

The first row, R, is the record for the public school children who have religious instruction. The second row, NR, is for those in the same class who do not. The third row, H1, is for the Hebrew school giving mild religious instruction, and the last row, H2, for the school giving more careful instruction.

TABLE LXIX

Effect on Deception of the Mention of Deity

Group	Number	Tests 1 and 2			Tests 3 and 4			Tests 5 and 6		
		M	SD	σM	M	SD	σM	M	SD	σM
R	25	8.9	5.3	1.06	6.4	4.2	.84	5.5	3.8	.76
NR	15	3.8	1.4	.36	7.8	3.5	.90	10.0	4.6	1.19
H1	29	5.2	4.8	.89	6.1	3.9	.72	6.3	2.4	.45
H2	26	7.8	2.8	.55	6.3	4.3	.84	1.1	4.9	.96

Of the public school class, the children who have religious teaching get progressively more honest as the idea of honesty and then the idea of God in association with the idea of honesty are introduced, whereas the children of the same classroom who do not attend religious school get progressively less honest under the same circumstances. Of the two Hebrew classes, one is not changed by either phrase; and the other, while not responding to the first phrase, is apparently greatly affected when the idea of God is mentioned.

This experiment was only preliminary to a more adequate study, and the number of cases is too small for reliable conclusions. It is reported, however, as suggestive of the kind of experiment that might be easily conducted to discover the values for conduct that inhere in various customary forms of control. The differences between the groups and between the behavior of the same group under the described conditions are large enough to warrant the feeling that in certain forms of religious training there are potential values for the control of conduct that are far from being realized in the ordinary life of the children concerned. The differences between the groups, put into terms of the probability that differences equally large would not recur by chance and translated into graphic diagrams, are presented in Figure 90. Each filled-in section of the long rectangles indicates the " significance " of the difference it represents. The longer the shaded portion, the greater the probability that it shows a genuine difference between the groups under the influence of the experimental conditions. The total rectangle stands for one thousand comparisons of like nature, and the shaded portion is the proportion of one thousand group differences that are likely to be due to the influence described, the unfilled portion being, conversely, the number of chances in a thousand that the difference obtained would occur between the groups by chance alone.

The top bar in the case of each comparison given in Figure 90 shows the public school group not attending religious school (NR) as far more honest than the religious school group in the same classroom or either of the two groups in the Hebrew schools. When honesty is mentioned, however, as the middle bar shows, all the religious groups now become less deceptive than the NR group, though not significantly so. But when the idea of God is brought in, all the religious groups become significantly more honest than those who have no religious instruction. This difference, it should be noted, is due more to the fact that the non-religious group gets progressively more dishonest, in spite of what is written on the board, whereas H1 remains about the same throughout. H2 gets strangely honest after the idea of God is brought in, though on the first two tests it was far more deceptive than the non-religious group.

What motives operated to change the behavior of the H2 group and the R group are not known, but whatever they were they did not do more than serve as a brake to prevent the H1 from getting worse and had no effect whatever on the NR group. It seems to be a fair conclusion to draw that the behavior of children in respect to the mode of deceit involved is in part at least a function either of the teaching they have received in religious schools or of miscellaneous factors associated with the fact that they are sent to such schools by their parents. That the former hypothesis is not entirely without foundation is suggested by the behavior of H2, which showed very little change for the better when honesty alone was brought into the situation but very marked change when the idea of God was mentioned.

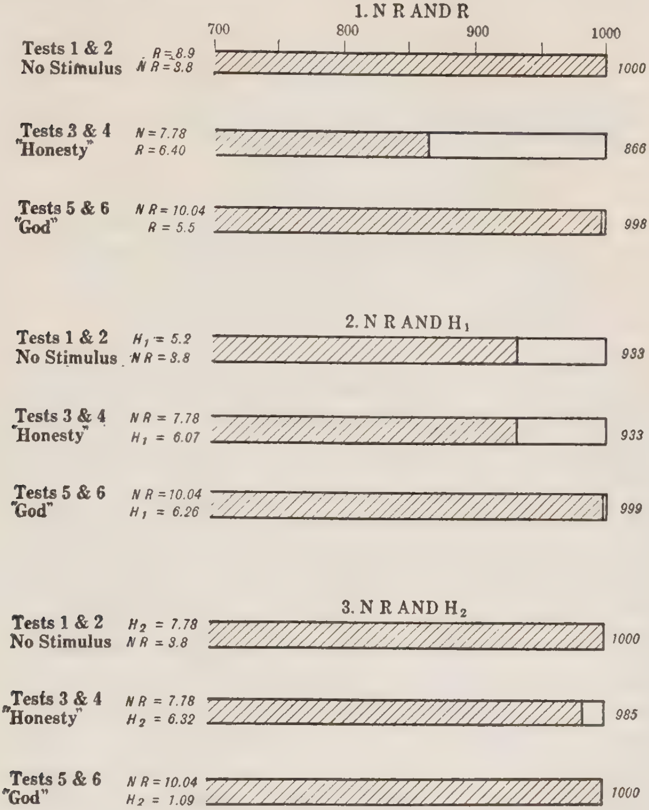


FIGURE 90

PROBABLE SIGNIFICANCE OF THE DIFFERENCES IN DECEIT BETWEEN MALLER'S GROUPS ON TESTS 1 AND 2, 3 AND 4, AND 5 AND 6

NR = the portion of the public school class not attending religious school
R = the portion of the same class attending religious school
H1 = the Hebrew school giving mild religious instruction
H2 = the Hebrew school giving more careful religious instruction

The length of the filled-in portion of the rectangle shows the probability that the difference given at the left is significant. The left end represents a chance of 700 in 1000.

PART IV

GENERAL CONCLUSIONS AND PROBLEMS

CHAPTER XXI

THE SPECIFIC NATURE OF CONDUCT AND ATTITUDE

In the first chapter of this volume we set forth the general characteristics of the modes of behavior which we have classified under the term " deceit " and pointed out their significance for the individual and society. We have dealt with the matter psychologically rather than in terms of ethics, concerning ourselves with objective concomitants and consequences rather than with the moral struggles of the individual or with social approvals and disapprovals, important as these may be. We have held that a person may deceive another in all good conscience, if his training has been of a certain kind, but that what he does is no less deceptive. The essence of the act is its pretense. Hence it can be described and understood only in terms of the human elements in the situation. It is not the act that constitutes the deception, nor the particular intention of the actor, but the *relation* of his act to his intentions and to the intentions of his associates. This relation can be defined in psychological terms. The typical deceptive act implies a conflict of wills with regard to either means or ends or both and the concealment of either the act or its intention or both in order to gain the end or utilize the means concerning which the conflict has arisen. The term applies to the cat that watches her chance to help herself from the kitchen table as well as to the citizen who gives pious reasons for robbing the state of its natural resources. If the intentions or methods of either were known to those whose rights were being infringed, the act of the deceiver would be frustrated. Success requires that the wolf appear in sheep's clothing.

Conversely, honest behavior is behavior which does not resort to subterfuge to gain its ends. But there are degrees of subterfuge. A person may be dishonestly honest. He may be honest in little things in order to gain the reputation of being honest in all things. This is his sheep's clothing under which his more subtle acts of aggression are concealed. Or one may be honest because it pays in a business way, but may publish as his reason for honesty that it is the only mode of conduct that appeals to an honorable man. He wins thus for himself a degree of confidence quite unwarranted by his true character.

Honesty in greater or less degree has for centuries been regarded as a virtue even though in the practical conduct of life its practice is in constant conflict with other equally admired ideals. The " honesty " of an employee is relative to the " loyalty " of the employee to the purposes and methods of the firm. National " honor " and national " honesty " are often in opposition. Truth which would inflict a fatal shock may be withheld from a sick patient in the interest of his recovery. The futility of the attempt to build character by accumulating virtues which in the nature of the case are frequently inconsistent with one another was long since forcibly portrayed by Coe in his address on "Virtue and the Virtues" at the meeting of the National Education Association in San Francisco.* A man may possess all the virtues without being virtuous. It is not the quality of the isolated act which distinguishes the good man from the bad, but the quality of the *man* as an organized and socially functioning self. We may add up his characteristics, whether these be virtues or vices, but the algebraical sum is not his character.

To this attack on the concept of virtues as elements of character has been added in more recent years the attack on the virtues as unified traits. Not only does character not consist of a sum of virtues, but the virtues themselves are not psychological entities with any real existence. They are not acts. They are classifications of acts. To attribute to a man who acts honestly a faculty or trait of honesty is like explaining the act of remembering by referring it to some faculty of memory, which our popular systems of mnemonics are supposed to develop as one would train a muscle. Of course some people remember better than others, but to refer this difference to some mysterious and specialized power of memory is to stuff our ignorance with words. Similarly, to say that an honest act is caused by a man's honesty is like saying that it is cold because the temperature has fallen. Some men, it may be, can learn to be honest more easily than others because of real mental differences of the nature of which we are not as yet aware; but whatever honesty a man possesses resides not in a secret reservoir of honest virtue nor in the ideal of honesty which he may hold before himself as worthy of his best effort, but in the quality of the particular acts he performs.

---

* Printed in the *Proceedings* of the National Education Association for 1911 and in *Religious Education*, Vol. VI, 1912, pp. 485–492.

We propose to bring together in this chapter and in the accompanying chapter of Book Two the data and arguments supporting the position taken in the last paragraph, which we may briefly characterize as the doctrine of specificity. According to this view a trait such as honesty or dishonesty is an achievement like ability in arithmetic, depending of course on native capacities of various kinds, but *consisting in* the achieved skills and attitudes of more or less successful and uniform performance.

As an introduction to the statement of the case, let us take the ability to add and the correlative ability to subtract. If a class had been faithfully taught how to add but not a word about how to subtract, no inherent faculty of figuring would come to their rescue if they were given a test which included problems in subtraction. Much alike as these two related processes may seem to an adult, they have to be learned; and the correlation between the two seemingly similar abilities will depend on (1) the actual elements which they have in common, (2) the amount of experience which the pupils have had with both, and (3) the extent to which the two processes are comprehended under a single more inclusive picture in terms of which they can be related to one another.

Honest and dishonest acts are specialized in the same way. Even after the principle of honesty is understood, the deceptive aspect of certain acts may not be noticed until one's attention is drawn to them. One may be meticulously honorable in his relations with his neighbors but steal a ride on the street car without thinking himself a thief. Acts are not accurately labeled because they are not completely analyzed. Consequently, an otherwise entirely honest man may be shocked and insulted when his sharp business practices are called stealing or his purchase of votes, political corruption.

Our conclusion, then, is that an individual's honesty or dishonesty consists of a series of acts and attitudes to which these descriptive terms apply. The consistency with which he is honest or dishonest is a function of the situations in which he is placed in so far as (1) these situations have common elements, (2) he has learned to be honest or dishonest in them, and (3) he has become aware of their honest or dishonest implications or consequences.

In support of the foregoing conclusion let us examine two types of evidence, the first relating to the specific nature of conduct and the second to the specificity of attitude associated with conduct.

THE SPECIFIC NATURE OF CONDUCT

We have to consider, first, the probability that an individual will behave in the same way when a given situation is repeated; second, the probability that an individual will behave in the same way on different tests in the same situation when only the material of the test is changed; and third, the probability that an individual will behave in the same way when the nature of the situation is markedly altered. We may assume that changes in behavior between the two test occasions may be regarded as functions of changes in the situation, particularly if these changes are proportional to the differences in the situations.

We have repeated only the IER home and school tests and the Speed and Coördination tests. Omitting the first, for which there was only one test, Table LXX gives the self-correlations of each test of each of these techniques and the average for each technique.

TABLE LXX

Self-Correlation of IER, Speed, and Coördination Tests

IER School		Speed		Coördination	
Arithmetic	.530	Test 1	.632	Squares	.587
Completion	.790	" 2	.605	Circles	.571
Information	.710	" 3	.582	Mazes	.548
		" 4	.473		
		" 5	.600		
		" 6	.525		
Average	.676		.569		.566

In the case of the IER school tests, six months elapsed between the two occasions, and there was a change of classroom for all pupils. Furthermore, on the second occasion there was considerable confusion as the children had expected to have a half-day off. The mean deception scores for the two tests were therefore quite different. But for the other two techniques, which were repeated after a few days, the means for the two tests were almost identical. Thus we can predict with considerable accuracy what a group will do on a second occasion if the situation is unchanged and if we know what it does on the first occasion. But even slight changes in the situation affect individual behavior in unpredictable ways, so that the *r*'s are lower than would be required for accurate prediction of individual behavior.

In the above illustration we kept the material constant but changed the general situation as to the day, the examiner, time of day (for the Coördination tests), and classroom (for the IER tests). In order to measure the likelihood that an individual will behave in the same way when the only change is in the material of the test, we correlate one test with another and find the average of these intercorrelations. Thus there are three IER school tests, and the average intercorrelation of these three with one another is .696. Table LXXI gives similar *r*'s for several types of deception.

TABLE LXXI

Intercorrelations among Deception Tests of the Same Type

IER school	.696
Speed	.440
Coördination	.462
Puzzles	.500
Contest	.458
Lying	.836

The first three *r*'s are similar to those we found when the gross situation was altered. In the case of the Speed and Coördination tests these gross changes make less difference than changing the *material* of the test while employing the same technique. For the IER test, the gross changes, to which we referred, are large enough to affect a greater change in behavior than changing the material from arithmetic to completions, etc., while keeping gross factors constant.*

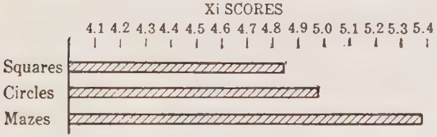


FIGURE 91

Amount of Cheating on Coördination Tests, Populations F to J

N = 2379

This tendency for the behavior to change with the material is still more forcibly portrayed in Figures 91 and 92, which show the average amount of cheating of several populations on the three Coördination and the six Speed tests.

The children cheated significantly more on the mazes than on the circles or squares, and all the Speed differences except between test 2 and test 3 are significant.

We interpret these differences to mean that even such slight changes in the situation as between crossing out A's and putting dots in squares are sufficient to alter the amount of deception both in individuals and in groups.

---

* There was also a slight change in the technique, the answer sheets being passed out *with* the Arithmetic test, but not passed for Completions or Information until the tests had been in each case completed.

Our third comparison concerns the probability that an individual will behave the same way when the situation is radically altered, as when he cheats by adding more scores to his paper instead of by copying answers from a sheet or by faking the solution of a puzzle rather than falsifying his score in an athletic contest. We may present these facts in terms of the correlations between different types of test in Table LXXII.

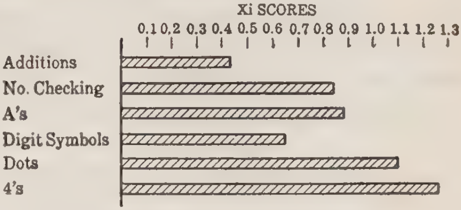


FIGURE 92

Amount of Cheating on Speed Tests, Populations A, C, D, E, P, R, and U

TABLE LXXII

Average Correlations between Single Tests of Different Techniques

	Speed	Coördination	Puzzles	Contests	Stealing	Lying
IER	.292	.285	.291	.198	.127	.312
Speed		.219	.255	.194	.128	.254
Coördination			.196	.062	.160	.161
Puzzles				.184	.283	.208
Contests					.162	−.003
Stealing						.132

This table reads: One IER test will correlate on the average .292 with one Speed test, .285 with one Coördination test, etc.

From Table LXXI we see that copying from a key on one test will correlate .696 with copying from a key on another test; adding on scores on a speed test will correlate .440 with adding on scores on another speed test; but copying from a key on one test will correlate only .292 with adding on scores. Indeed the average of the six intercorrelations of the four classroom tests reported in Table LXXII is only .256. Reference to Table LXXI again will show that the different single tests in any one technique are more highly correlated than any one of those tests is with one of another technique. Changing the situation lowers the *r*'s.

The eight *r*'s between the four classroom tests and the two out-of-classroom tests, contests and stealing, average only .167 — still lower than .256, which is the average of the classroom *r*'s. The lying test, which was also given in the classroom, averages .234 with the other classroom tests and .064 with the two out-of-classroom tests. Thus as we progressively change the situation we progressively lower the correlations between the tests.

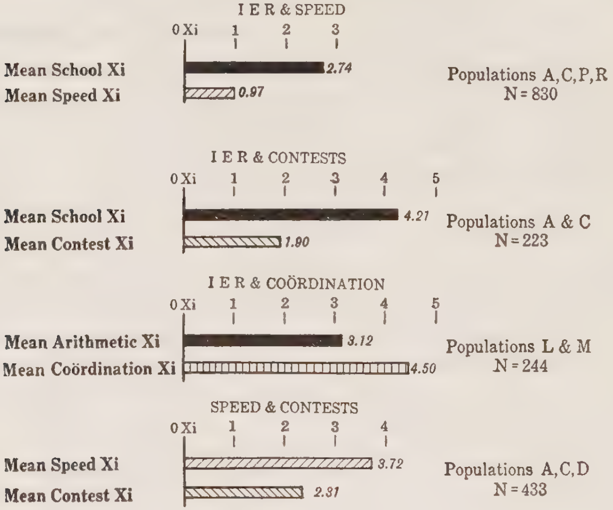


FIGURE 93

Amount of Cheating on Different Deception Tests

As before, we interpret these facts to mean that the consistency of the individual is a function of the situation.

That the situation is a real factor in determining the amount of deception can best be shown by comparing the mean Xi scores of large groups on different types of test. If the constant tendency to cheat or be honest were the sole or chief cause of specific amounts of deception, these Xi scores ought to be alike, but as Figure 93 shows, they are vastly different.

These differences are anywhere from 4 to 25 times the standard error of the difference and are far larger than those of Figures 91 and 92, which give the differences in amounts of cheating on different tests of the same technique.*

These are differences among large groups of children, it must be remembered, and therefore reveal a constant tendency for certain types of opportunity and material to induce more cheating than certain other opportunities and types of material.

We have shown how correlations between tests fluctuate downward as the situations become increasingly different. Our theory requires that, if we had a sufficient number of varying techniques, these r's would run from $+1.00$ to zero, that is, from the point where there was a sufficient number of identical elements, a sufficient amount of common experience, and a sufficient comprehension of the situation for the two situations to function in exactly the same way, to the point where there was so little resemblance between the two situations, so little common experience, and so little comprehension of their significance that deceptive behavior in the two situations would be totally unrelated.

It may be contended of course that as a matter of fact we rarely reach a zero correlation, no matter how different may be our techniques, and that this implies some such common factor in the individual as might properly be called a trait. We would not wish to quarrel over the use of a term and are quite ready to recognize the existence of some common factors which tend to make individuals differ from one another on any one test or on any group of tests. Our contention, however, is that this common factor is not an inner entity operating independently of the situations in which the individuals are placed but is a function of the situation in the sense that an individual behaves similarly in different situations in proportion as these situations are alike, have been experienced as common occasions for honest or dishonest behavior, and are comprehended as opportunities for deception or honesty.

We have just referred to the fact that individuals differ on any one test or group of tests. In selected populations and with tests which are relatively unmotivated we find a large proportion of children who do not cheat, with the rest distributed somewhat after the fashion of the normal probability curve. But in large populations the proportion of honest cases is reduced and the total curve closely approximates the normal. In Figure 94, for example, is the distribution of the CT ratio for 2443 children of populations C, D, F–J, L, and M, in which each pupil had at least ten tests.

---

* The scale for Figures 91 and 92 is five times as coarse as that for Figure 93.

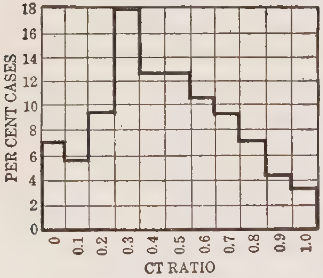


FIGURE 94

Distribution of CT Ratios, Populations C, D, F to J, L, and M
N = 2443

As the fact of cheating used in making up the CT ratio represents only the extreme probability of 999 cases in 1000, it is clear that a good many of those who are marked as cheating once, twice, or three times and also of those who have zeros are probably misplaced. The shifting of all cases toward the upper end of the scale would tend to straighten up the curve to approximate the shape of the normal probability curve, in the form of which most facts about human nature are distributed. At first thought this might be interpreted to mean that these individuals differed from one another with respect to a unified trait varying all the way from just not any honesty to complete honesty. But in order for this to be true, it would be necessary for the CT ratio to represent a *scale* with equal steps, whereas, as we saw above, cheating on the IER tests is by no means equivalent to cheating on the Speed tests, etc. Inasmuch, therefore, as the units of the ratio mean cheating once in a hundred times on *any test*, twice in a hundred times *on any two tests*, etc., the shape of the curve can be explained only in terms of the unique relation which each individual bears to each situation — a relation which makes it more likely that, if the same tests were repeated, he would cheat on just the same ones than that he would cheat on any others. This likelihood is expressed by the relative size of the self-correlation of the tests and the intercorrelation of the tests of different techniques.*

THE SPECIFIC NATURE OF ATTITUDES

Strictly speaking, what we measure by our techniques is not conduct but tendency or attitude, for we remove the external barriers which ordinarily prevent the full expression of the tendency and permit the individual to go as far as he wishes to in the direction of dishonest performance. In an experiment† reported in 1926 and printed in full in Book Two, we came upon evidence for believing that the attitudes constituting the driving power of the act are as specialized as the act itself. The tendency to copy answers from answer sheets and substitute them for one's own work, for example, exists in a measurable quantity peculiar to the individual. Whatever may be the motives which combine to make him use the answer sheet, they operate to overcome just so much resistance and no more, and this resistance can be arranged to begin with just no resistance at all and move up by measured steps to the point where no one will overcome it in order to cheat. The scheme used was roughly as follows:

We first arranged a test so that it would be very troublesome and risky to cheat on it. The answers to the questions were made by drawing a line in ink around the correct answer. In order to cheat, a pupil had to erase this mark made in ink and draw another. At the other end of the scale was a spelling test the answers to which were made by entering a check mark in lead pencil against a misspelled word. To cheat, all one had to do was to add more check marks or erase and change those already made. In between were procedures requiring varying amounts of time and trouble in order to make one's paper appear like the answer sheet. In order to be absolutely sure of every change made, we gave the test in school and then took it to the office and had an exact copy made of each paper. Then we returned to the school and asked the pupils to score their own papers by referring to the keys we provided. We then compared their papers as they now appeared with what they were before the scoring had been done. In this way every bit of deception was recorded.

---

* As may be seen from the tables of Chapter XII, Book Two, none of these inter-r's when corrected for attenuation exceeds .60, so that no matter how many times any one type of test were repeated it would not be possible to predict from it whether an individual would cheat or not on any other technique.

† "First Steps toward a Scale for Measuring Attitudes," *Journal of Educational Psychology*, March, 1926.

By figuring the percentage of cases that cheated at each level of difficulty we were able to give a numerical value to the amount of resistance that had to be overcome at each level of difficulty. We found that practically all who cheated at any one level cheated also at each lower level, and that all the one-cheaters cheated at the lowest level, the two-cheaters at the two lowest levels, etc. In other words, we had a scale for measuring the amount of the tendency to cheat. The extent to which this scale actually worked is shown in Figure 95. The steps on the scale are represented by the darkness of the shaded bands, each one of which stands for one of the tests. The length of a band represents the number of cases cheating at that level. If the scale had been perfect, there would have been no gaps in it. As it is, 89% of the gaps are filled; *i.e.*, the scale is 89% perfect.

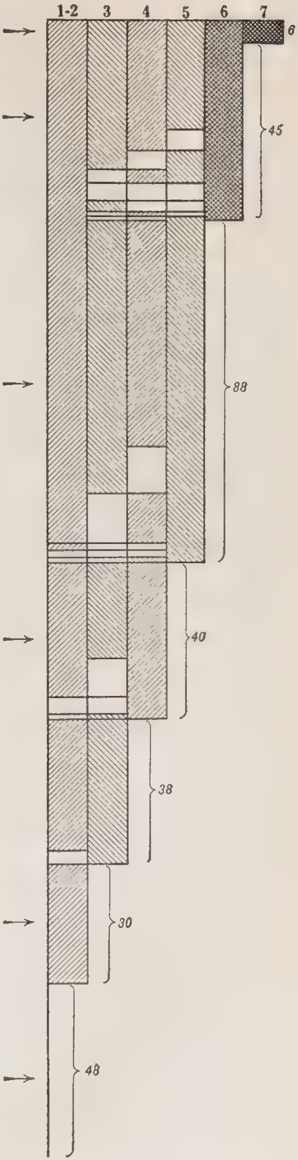
An illustration from another field may help to make clear the meaning of the chart. Suppose we have seven makes of cartridges and wish to measure the relative velocity with which each will project its bullet. As a rough measure we might take a series of substances of varying density, such as a steel plate one inch thick, a block of hard wood two feet thick, a block of hard wood one foot thick, a block of soft wood a foot thick, a piece of asphalt three inches thick, a piece of plate glass, and a heavy piece of cardboard. We might then proceed to shoot cartridges of each make into these various substances, keeping a careful record of each shot to see which bullet pierced which substance and at what point in the series of increasing densities a certain type of bullet was stopped from any further progress. Bullets with practically no velocity would strike the cardboard and fall to the ground; but some would

FIGURE 95

THE SCALING OF ATTITUDES ASSOCIATED WITH ONE FORM OF DECEPTION

The numbers at the top refer to the following tests, which are described in Book Two:

1–2 Arithmetic and Spelling
3 Word Knowledge
4 Completions
5 Reading
6 Disarranged Sentences
7 Information (ink)



doubtless pierce the steel plate, and these would also pierce all the substances offering less resistance.

In the case of cartridges of uniform quality, there would be few exceptions to the rule that any make or style which passed through a given resistance would also pass through any less resistance. Also the different styles could be identified as "steel-piercing" or "soft-wood" cartridges, meaning that they possessed just whatever force was needed to pierce the object named.

So with the velocity or force or drive of a particular type of deception such as using an answer sheet for answers. Apparently the habit or act is associated with a tendency or attitude of a specific *amount*, which carries the individual just so far and no farther. Those who overcome the greatest resistance in order to cheat will overcome also all weaker resistances, and those that can overcome only the least resistance will be found cheating only on the test which requires the adding of a check mark, but not on the test which requires the writing of sentences or words in order to deceive.

On the chart, the arrows represent the direction in which the cheating drive is operating, and, as was suggested before, the darkness of the shaded blocks represents the varying resistances to be overcome if cheating is to be accomplished. Forty-eight cases, like the bullets without velocity, did not overcome even the least resistance, but six overcame even the heaviest resistance and all six also cheated on all the tests with less resistance.

The significance of this for our present discussion is that, although other types of cheating may probably each be scaled in the same way, when the types are intermingled the results *do not* scale. That is, if we put together a series of speed tests, those cheating on the one requiring the most trouble to cheat will also cheat on the rest. But if we attempt to combine all techniques in one scale, as we might by using the CT ratio or a ratio representing all tests whether in classroom or out, the results do not scale, *i.e.*, the drives are specific and are a function of the situation and the mode of deception for which the situation calls.

CHAPTER XXII

THE MOTIVATION OF DECEIT

At the very beginning of this report we stated as our opinion that the study of character must include the objective determination of the facts concerning conduct: What does the child actually do? What are the circumstances under which he does it? With what other facts is the act associated? This volume has reported what we have been able to discover concerning one type of conduct the essential features of which are (1) a conflict of wills and (2) either the concealment of the act by which one party to the conflict surreptitiously gains his ends, or the misrepresentation of his motive. Variation in the ends sought, the acts resorted to, and the motives in operation does not affect the essential nature of an act of deception, psychologically conceived, but differences in ends sought and motives operating as well as particular ways used to deceive others do have a great deal to do with our understanding and control of the tendency; and since control as well as prediction is an important objective of educational research, our report would be incomplete without the inclusion of such facts as we have been able to gather concerning this aspect of our problem.

The reader will recognize at once, however, how difficult it is to deal *experimentally* with motives when studying deception. One might easily invent a situation in which the subject would be tempted to fake the answer to a puzzle, say, by a gradually ascending series of bribes until the point was reached where he could no longer resist. We have carefully avoided doing anything of the sort, but have depended altogether on the operation of normal school motives even when attempting to control them. How these normal motives operate we shall point out presently. So far as any other type of motivation is concerned, we shall have to discover it either by direct questioning of the pupils or by inference from other facts. Both of these methods have also been utilized.

THE CONTROL OF SCHOOL MOTIVES

We attempted to control the operation of ordinary school motives in two ways: first, by stating the purpose of the test when it was being administered and, second, by showing the pupils the norms for pupils of their grade and the score which would be equivalent to the usual school marks, A, B, C, etc.

A. Stating the Purpose of the Test

In Chapter IV we described our first use of the IER tests and our effort to standardize the motives under which the pupils should work. It will be recalled that we had five batteries of directions. In one set, no motive was stated for giving the tests. In each of the other four a phrase intended to arouse a specific motive was frequently repeated. These phrases represented respectively (1) personal achievement, (2) individual competition with other members of the class, (3) group competition, and (4) helpfulness to the examiner with no individual or group recognition. The detailed results flowing from the use of these phrases are given in Book Two, Chapter IV. We found that it made almost no difference in the amount of cheating whether appeal was made to the competitive tendencies, where cheating would profit the individual or the group, or to the desire to be of service, where cheating could be of no advantage to anybody in the class. There was, furthermore, as much cheating when nothing at all was said about the purpose of the tests as when any one of the four phrases was used.

Three conclusions are possible from this experiment. We may conclude that the children paid no attention whatever to what was said about the purpose of the tests, or that they heard what was said but did not believe it, or, finally, that the general school drive or desire for good marks together with the habits to which it was attached was too powerful to be deflected by a mere statement by the examiner.

B. Stating Test Norms

In the experiment referred to in the previous chapter and described in Chapter XII of Book Two, we presented each pupil with a sheet of paper * giving the scores that might be expected from pupils of his grade and the equivalent school marks for these grades, thus providing a standard toward which to work. In one instance we said nothing about the use that might be made of the pupils' scores and in the other instance we stated that the grades would count on the pupils' monthly report. Although these same pupils were not tested with the same material without the presence of the norms, they had material which was quite similar; and it is apparently the case that the mere presence of the norms tends to increase the amount of cheating, and that the knowledge that the scores will count toward the monthly standing increases it still further.

Such facts do not in the least justify the cheating or lend support to the contention that all school reports have a bad influence on the pupils. They merely indicate that, unless there is some change in the resistance to the tendency to deceive, an increase in the profits from deception will increase the amount of deception.

THE QUESTIONING OF PUPILS

In our discussion of lying we quoted certain questions which appeared on our Pupil Data Sheet bearing on pupils' conduct during the examinations in which we had measured their tendency to deceive. One of these questions was:

" If you did copy on any of these tests that you took a little while ago or received any help you should not have received, just why did you do so? "

Only a small percentage of the cheaters were willing to answer the question, the rest either saying nothing or insisting that they did not copy or get unfair help. We have tabulated the answers of those who replied, classifying them as shown in Table LXXIII.

---

* Or used the blackboard.

TABLE LXXIII

MOTIVES GIVEN BY CHILDREN FOR CHEATING

	A	B	C	TOTAL	PER CENT
Test too hard	30	53	29	112	45.7
To stand high	17	10	23	50	20.3
Misunderstood	7	13	3	23	9.4
Others cheated	7	6	3	16	6.5
Don't know	4	7	4	15	6.1
Lazy or felt like it	2	6	6	14	5.7
Too many chances	2	4	0	6	2.4
Test unfair	2	3	0	5	2.3
So class would win	4	0	0	4	1.6
				245	

Almost half of those who answered the questions at all said that they cheated because the test was too hard. The next most frequent reason given is " to stand high," which is similar to the first. Putting these two together, we have two thirds of these cases admitting that they cheated in order to do well on the test. This confirms the suggestion gained from the two experiments we have described, *viz.*, that the " school drive " or " success motive " operates very strongly and is particularly likely to result in deceptive practices when the situation is difficult and deception is possible. But here again we must not conclude that school tests " cause " children to cheat or that the desire for high grades is in itself an adequate motive, for many children who find tests difficult and who want good marks do not resort to subterfuge in order to appear well. We must qualify any such general statement by saying that, when a child's resistance to cheating is low, the presence of the desire for good marks may tempt him to use unfair methods to gain them, particularly when he feels that he is in a tight place or that the task required is unfair to him.

INFERENTIAL DATA

A. Relation between Deception and Ability

If it be true, as stated by certain of those who cheated, that the difficulty of a test is a primary cause of deception, then we might properly expect that those with less ability would cheat more than those with greater ability. In the double-testing technique we have, as will be remembered, two scores for each child, one secured under " honesty " conditions, and representing his ability, and one secured under conditions which permitted cheating. We are able, therefore, to determine the different amounts of cheating at different levels of test ability. Chapter XII of Book Two reports the results of this study for the IER tests with three populations.

It is found that there is always a negative correlation between the ability to do the test and the amount of cheating exhibited on the test. That is, those who are better able to do the test cheat less than those who find it more difficult. These *r*'s range from $-.045$ to $-.513$. As ability to do tests like these is in part a function of intelligence, it is necessary to show what the relation between ability and deception is when intelligence is kept constant. The partial *r*'s are therefore also given in Book Two, and these range from $+.049$ to $-.338$, showing that in most cases cheating is in part due to lack of ability to do the test. This fact is quite conspicuous in the case of the Completions test, which correlates $-.513$ with the amount of deception shown on this test. The facts are presented graphically in Figure 96, which gives the difference between the gain or loss when no answer sheets were available on either of the two test occasions, and the gain or loss when on one occasion the children had access to the answer sheets. Each bar represents a different level of honest ability, the honest score being indicated at the left, in terms of the actual number of correct answers on the test. The length of the bar represents the amount of deception shown, on the average, by pupils having the test ability given at the left. Thus, those who scored 16 or 17 points on the Completion test when there was no chance to cheat gained, when they had the answer sheets available, 8.15 points more than they could have been expected to. But those who scored 30 or 31 on the test had an excess gain or cheating score of only 1.38 points. Obviously the cheating was proportional to the lack of ability.

The less able did not cheat more because they had more room on the test to cheat, as might be at first imagined, for on this test there were 55 items, and even when the answer sheets were available the largest score shown was 40.

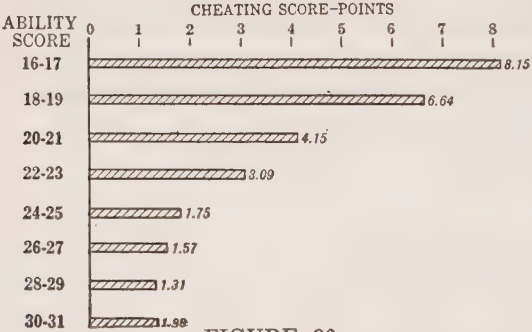


FIGURE 96

Relation of Cheating to Test Ability, IER Completion Test, Population C

When we turn to the results of the Speed tests, we find a quite different picture. Here cheating is accomplished not by copying answers from a sheet but by *doing more of the very thing that constitutes the test*, only doing it surreptitiously. As shown in Book Two, Table CLXXVIII, the correlations between honest ability and deception scores are all *positive*, ranging from +.036 to +.434 in four populations. That is, those with greater facility in performing rapid mechanical operations actually make more use of the opportunity to cheat than those with less facility. This is quite the opposite of the case just reported for the IER tests, where those with less ability proved to be the greater cheaters.

Two reasons for this difference are suggested. In the IER tests there was a rapid rise in difficulty as the tests proceeded, so that those with less ability soon found out their limits and were confronted with the certainty of what seemed to them to be a low score unless the answer sheets were used. As the use of these sheets did not require the same ability that was needed for doing the tests, the more able had no advantage over the less able when it came to copying answers. Consequently the less able cheated the more.

On the other hand, the Speed tests were mechanical in nature, not graded in difficulty, and the material was so unfamiliar that there was no way of knowing what constituted a good score. Furthermore, cheating depended on the use of the function being tested, so that those with greater ability did have an advantage over those with less ability in the use that could be made of the time set aside for the self-scoring of the papers. Therefore, with no special incentive to stimulate the less able more than the more able, and with the more able having the advantage in the speed with which answers could be added, naturally the more able did the more cheating.

All this goes to show that the motives leading to deceptive behavior are determined not only by the relation of the pupil to the school in general, or to the teacher, or to his parents' zeal for his success, or to his own ambition, but also to the specific nature of the test material itself and his ability to master it.*

---

* As evidence of the effect of the situation on motivation, Dr. J. Maller offers the following brief summary of one phase of a study he is conducting in coöperation with the Inquiry:

A test of coöperativeness was given which required the children to work at times for their class on a class project, while at other times the same task was performed by each child in a personal enterprise. An opportunity to be deceptive was introduced and the amount of deception of each child at each opportunity was measured. It was then possible to compare the amount of deception when the motive was to work for the class with the amount of deception when the motive was to work for self. A consistent tendency on the part of the boys tested was to cheat considerably more when working for self than when working for the class. The difference in terms of the standard deviation was 2.26. (That is, in 989 cases out of 1000, the boys will be more deceptive when the motive is a personal enterprise than when it is a class project.)

The deception of children when working for themselves and when working on a class project was measured. The means (of scores of deception) for the boys and girls of each class were compared. A definite relationship was observed between the difference in deception of the boys and of the girls within each class and the difference in number between the two sexes within the same class. A positive correlation of .51 showed that, where the boys were

B. MISCELLANEOUS CONCOMITANTS OF DECEPTION

From what has been said, the desire for good marks seems to be the most common motive leading to deceit in tests given in school. It is obvious, however, that this same motive leads also to honest achievement. Indeed there is probably no single motive exclusively attached to deception except in certain rare cases where the individual has cheated so much that he enjoys doing so for its own sake or for the excitement he gets from his secret conflict with the teacher. The *motivation* of deceit is to be found rather in particular combinations of incentive, opportunity, standards, and attitude, which, as was suggested in Chapter XIV, are so numerous as to defy organization in the form of a law of motivation save in the most general terms. Let us attempt, however, some such general formulation.

The child brings to school as part of his own inner equipment three sets of interrelated factors bearing on his practice of school honor: first, his ambition for school achievement, no matter how aroused, how large or how small, or how influenced by the school itself; second, his standards, code, or ideals regarding the methods by which he shall get what he wants, whether by genuine achievement or by hook or crook; third, his responsiveness to such standards, including his ability to obey them, to resist temptations to ignore them, to keep them in mind, etc.

In school, the child faces a complex situation many aspects of which are involved in any single act of deception. There are the general school standards, which he becomes aware of through

---

in a majority, their deception score for class tended to be greater than the deception score of the girls, and where the girls were more in number, their deception for class tended to be greater than that of the boys. The majority group of a class thus having a stronger motivation to work for the class (it involved the winning of a prize for the class) expressed that motivation in a definite attempt to increase the score of the class even through deception. Considering the deception means of the boys when working for class separately and correlating those means with the ratio of their number to the number of girls, we find an r of .44. That is, there was a positive correlation between the size of the majority and the amount of deception.

hearsay or direct statement by the authorities; the code of the classroom, which he learns in like manner; the example of the other pupils, to which by nature he may be more or less susceptible; the relation of the teacher to the pupils, whether friendly and coöperative or hostile; the personality, prestige, and statements of the examiner and the extent to which he allows opportunity to use deceptive methods; and the particular stimulus of the test itself, which, as we have seen, makes considerable difference in the nature of the deceptive act. Whether or not a child deceives on a test depends, then, upon the way in which these various factors are combined in his particular case. Some children do not take advantage of the opportunity to cheat under ordinary school motives. Presumably these are cases in which the standards brought to school or achieved in school are against dishonest practices and in which also there is the ability to adhere to such standards in the face of temptation. Under ordinary conditions these constitute a group by themselves, but there is no apparent reason for supposing that they would continue to constitute such a group if the incentives to deceive were raised. But as was shown in the previous chapter, with the incentives left as they are those who do yield to the temptation to deceive differ among themselves in the amount that they deceive, much as they differ in any other physical or social fact which is caused by a great variety of unrelated factors.

Those who yield to the opportunity to deceive do not do so in any wholesale way, however, but in a rather specialized way according to the particular situation in which they are placed. Just what the factors are in any situation which tempt one child to cheat but leave another untouched it is very difficult to say. We have drawn attention in our preceding chapters to various aspects of the situation that are associated with deception, such as the fact of being over-age and at the same time dull, or the fact of belonging to a racial or national group that occupies a socially inferior position in the community, or the fact of being in a class with a friendly and coöperative atmosphere or whose pupils have developed a group morale that does not favor deception. Once cheating is admitted as a possibility, however, none of these things seems to be as significant as the actual test situation itself in determining differences among the children, for none of the correlations we secure with any of these factors equals, for the individual, the self-correlations of the tests. That is, if a child tends to use an answer sheet at all, he tends to use it again when this kind of opportunity comes around, the reason for doing so being presumably his feeling that he has to in order to get a good mark, and that there is nothing to prevent it. But when this same child is placed in another situation, which requires for deception that he cheat a classmate rather than his teacher, or that he add on answers instead of copying them from a key, or that he take money out of a puzzle box, the fact that he copied answers from the key has almost no bearing on the question of his honesty in these other situations. He may cheat with the key and be honest in all the rest. In other words, his deception is as much a function of the particular situation in which he is placed as it is of his own inner experience and training, his general ideas and ideals, his fears, ambitions, and purposes. All these operate not in general but in relation to specific situations which, as far as their power to stimulate deception goes, must be interpreted in terms of their relation to the abilities of the individual and his comprehension of their significance both to his ambition and his standards.

As long as there is conflict between the teacher and the school authorities generally on the one side, and the pupils on the other, there will be deception. Some pupils, because of the out-of-school environment in which they live or because for some reason they do not feel the conflict, will not deceive. Others will be afraid to. Others will have too little ambition to take the trouble to cheat. Others, although responsive to the ideal of honor, will be unable to resist temptations to cheat particularly when urged to do better work than their ability warrants. If there is anything in school procedure which puts a premium on subterfuge, it would be folly to imagine that any teaching of honesty, whether in school or out, would greatly alter the actual practice of the children. Hand in hand with the development of codes must go the types of experience in which honor is the natural and rewarded behavior, to be learned by practice in those situations where the child finds himself ethically at home. Only when thus learned, is it to be expected that, as his experience enlarges to include areas of life which have not yet been brought under the dominance of ethical ideals, the child will possess the insight and self-mastery to challenge an imperfect world with a high ideal.

CHAPTER XXIII

PROBLEMS AND CONCLUSIONS

From the outset we have insisted that these studies in deceit are of necessity fragmentary and incomplete, for the number of situations in which deception may be practiced and the number of ways of deceiving others are truly legion. A correct scientific procedure would be to collect from actual life a large number of such situations, tabulate them, note the frequency of their occurrence, and then build test situations around the most frequent. In this manner are vocabulary tests and spelling tests made. But the case of conduct is not so simple as that of vocabulary or spelling. A word is a word and is always the same, but no recurring situation is ever an exact duplicate of its former occurrence. The best that could be done, then, would be to judge by external appearances and classify situations according to their major features. But even this would be an enormous undertaking.

Another approach to the problem may be made by analyzing deceptive situations, and this procedure we shall illustrate. In the following study we have assumed that all deceptive situations have in common certain elements. These elements we have classified under five headings and then further analyzed each group.

PRELIMINARY ANALYSIS OF DECEPTION

A complete act of deception involves at least the following factors: (1) the person, persons, or institution deceived, (2) the motive for doing it, (3) the thing about which the deceiver deceives, (4) the way in which it is done, (5) the consequences to the deceiver, the deceived, and others.

I. Persons or institutions deceived
  A. Persons to whom the deceiver is or pretends to be loyal, such as members of the immediate family and friends
  B. Institutions or organizations to which the deceiver is or pretends to be loyal, such as his church (if he is a member), his school, his clubs, his teams
  C. Persons to whom the deceiver owes no special allegiance, such as acquaintances, strangers, merchants, plumbers
  D. Institutions or organizations to which he owes no special allegiance, such as the railroad company, the gas company
  E. Enemies of the deceiver

II. General motives for deceiving

The number of specific motives for deception is very great, and no detailed analysis is here attempted, but most of them may be classified as follows:

  A. The desire to do positive harm to the deceived and cause suffering and hardships (Motive: *e.g.*, revenge)
  B. The desire to cause inconvenience or embarrassment or perhaps dishonor to the deceived (Motive: *e.g.*, jealousy or envy)
  C. The desire to gain something in the way of money, objects, property, or advantage, prestige, applause, approval, etc. (Motive: *e.g.*, aggressive greed)
  D. The desire to protect or defend oneself against reproof, embarrassment, physical pain, punishment, dishonor, loss of property, etc. (Motive: defense tendencies)
  E. The desire to compensate oneself for some loss or some handicap (Motive: compensatory tendencies)
  F. The desire to promote or defend the interests and welfare of a person or persons to whom the deceiver owes allegiance (A of section I above) (Motive: loyalty to friends)
  G. The desire to promote or defend the welfare and interests of B of section I above (Motive: loyalty to a cause)

- H. The desire to promote or defend the welfare and happiness of C of section I above (Motive: social justice)
- I. The desire to promote or defend the welfare of D of section I above (Motive: community welfare)
- J. The desire to promote or defend the welfare of E of section I above (Motive: coöperative respect)

III. The things about which the deceiver deceives
- A. Social values, such as the importance of events
- B. Economic values, the worth of goods
- C. Acts of conduct, his own or others'
- D. Motives for conduct, his own or others'
- E. Inventions
- F. Knowledge or information, possessed by himself or others
- G. Skills and abilities
- H. Physical events, such as storms, or facts of time and place
- I. Beliefs, his own or others'
- J. Feelings, his own or others'

IV. How the deception is accomplished
- A. By giving the deceived actual false information either oral or written but communicated by language, such things as fabrications, invention of stories, reporting events that never happened
- B. By distorting true information so that the deceived will be misled as to conclusions. This is done by overstatements, exaggerations, etc. or by understatements or by otherwise twisting the truth.
- C. By concealing information, by silence, evasions, denials, etc.
- D. By *acting* in such a way as to mislead the deceived concerning the true intentions, motives, beliefs, or feelings of the deceiver or others
- E. By supplying the deceived with inadequate sensory data, so that a total situation will appear different from what it really is. Sleight-of-hand tricks, fake advertisements, etc. are illustrations.

V. Possible undesirable consequences to the deceiver, if caught, or to the deceived or others
  A. Severe punishment or suffering
  B. Imprisonment and deprivations
  C. Loss of all social standing, social ostracism
  D. Loss of membership in some organization
  E. Loss of friends
  F. Loss of confidence of others
  G. Loss of property, fines
  H. Severe reprimand
  I. Mild rebuke or reproval
  J. Temporary embarrassment

Some notion of the number of possible situations involving deception may be had by merely figuring the permutations and combinations of the items in this outline. If persons or institutions deceived are kept in five classes, and motives in ten, and things about which deception takes place in ten, etc., and if each situation is composed of five elements, one from each general heading, there are 25,000 possible combinations. As a matter of fact, the different kinds of persons or institutions deceived are more than five, the motives many more than ten, and so on for the other elements, so that the total number of situations will run into the millions. But there are probably no more than a thousand that are frequent enough to justify inclusion in a test.

In Chapter III it is pointed out that we selected our test situations more with reference to convenience than to frequency, but tried to choose those which are important in child life. They do not nearly cover, therefore, the field charted in the outline given. The persons intended to be deceived by those who cheat in our test situations are usually the teacher, the examiner, the classmate or fellow contestant, and probably the parents or friends. The general motives,* as far as we have detected them, are for the most part the desire to do well and to compensate for the difficulty of the test. The things deceived about are mainly abilities or skills, and the deception usually takes place by distorting true information so that facts will appear to be different from what they really are.

---

* See Chapter XXII.

In Chapter V we predicted how many more situations similar to those we have would be needed to measure deception adequately in certain typical situations. These predictions were made on the assumption that the average intercorrelations among all situations would remain the same as among those measured. In other words, the number of tests required depends on the extent to which the situations measured are random samples of the total number. Of course they were not intended as random samples, although they might turn out to be so. Most of them are school situations. Even the parties, in one population, were given at school. The home test is the only strictly non-school situation in the list, and even here the work done at home is for school credit.

To complete the picture, more situations are needed that center about the home, the store, the playground, or the club. The persons intended to be deceived should be parents, brothers or sisters, the merchant, the gas company, the employer, the club, and the like. The motive should be controlled as far as possible to include certain altruistic motives listed as F to J in the outline presented. The situations should be so arranged that the deceiver deceives about such things as economic values, his own motives, intentions, feelings or beliefs, or his own conduct. Such situations are easy enough to arrange but difficult to administer in actual tests. Children are available in groups mainly in school, and this is the reason why most of our tests are school situations. It would be necessary to do a great deal of individual testing before the whole range of deceptive conduct could be adequately sampled, and individual testing of this sort is slow and expensive. The first major problem, therefore, for a complete study of deceit is that of adequately sampling life situations in which deceit is practiced.

Another major problem ahead is to determine the significance of deceit in the total complex of character. This necessitates some measure or estimate of character as a whole, which would enable us to correlate with it either the total deception score or parts of it.

It may be, for instance, that some types of deception are more frequently associated with less developed character than others or than a total deception score. But satisfactory measures or estimates of character are not at present available and so we have not so far been able to undertake this important inquiry. Indeed, one of the aims of the research, of which this volume reports only one phase, is to build a series of tests that will " measure " character. Until such a " character test " is made by someone, the relation of deceptive tendencies to character as a whole must remain a matter of speculation rather than of empirical investigation.

GENERAL CONCLUSIONS FROM THE STUDIES IN DECEIT

A. Results of Primary Studies

The primary studies are concerned with devising tests and techniques for measuring deceptive behavior. The general procedure has been to place the child in a situation in which deceit may be practiced and record his conduct. Three types of deceptive conduct have been tested: cheating, lying, and stealing. The situations in which deceit has been measured are: (1) certain classroom situations in which the pupils may or may not cheat on a test, examination, or class exercise, (2) certain situations in connection with athletic contests in which the contestants may or may not deceive concerning their achievements, (3) certain situations arising in party games in which contestants may or may not cheat, (4) a situation involving school work done at home. Lying has been tested (1) by asking the child whether he did or did not cheat in some of the above tests, (2) by asking questions about those items of conduct which are generally approved but which are not often practiced. Stealing has been tested by placing the subject in a situation (1) in which there is an opportunity to take money and (2) in which there is an opportunity to take small articles.

The whole battery of deception tests contains 22 opportunities to cheat in classroom work, 4 opportunities in athletic contests, 2 in party games, and 1 in school work done at home. The lying tests consist of 36 questions in one case and 10 in the other which may be answered falsely; and the stealing tests offer 2 chances to steal money and 1 to steal small articles.

Granted that these situations, as we have shown, are not an adequate sampling of the whole range of possibilities, since we specifically limited our research to certain types of situations; yet, as far as they go, they are reliable and valid. That is, we do not claim to have measured deception in general but only in the types of situations studied.

B. Results of Secondary Studies

Some eleven thousand children of ages 8 to 16 have been subjected to parts (and in a few cases to nearly all) of our test situations. The results have been related to the following factors: age, sex, intelligence, physical and emotional condition, socio-economic level of the home, the cultural level of the home, the race, nationality, and religion of parents, school grade, attendance, achievement, retardation, deportment, association with friends and classmates, sociability, suggestibility, attendance at motion pictures, progressive *versus* conventional school methods, teacher influence, school and class morale, membership in clubs or organizations purporting to develop character, Sunday-school attendance, and certain efforts to teach or affect honesty. The more outstanding results of the studies follow.

1. The Relation of Deceit to Age. The older pupils in any given school group are slightly more deceptive than the younger children. The differences vary with the test situation and the group tested.

2. Sex Differences. Sex seems to make no difference. On some tests and in some groups, the boys are more deceptive; on other tests and in other groups the girls are more deceptive. In the home situation the girls usually cheat more than the boys, but the cause is presumably a difference in interest rather than in honor.

3. Relation of Deception to Intelligence. Honesty is positively related to intelligence. In almost any group of children of approximately the same age, those of higher levels of intelligence deceive definitely less than those of lower levels. The child who scores above the average for his age in intelligence will, other things being equal, score below the average for his age in deception.

4. Emotional Instability. Children who show symptoms of emotional instability or maladjustment (as measured by one standard test) are more likely to deceive than those with fewer such symptoms.

5. Physical Condition. This, as measured by our tests, is unassociated with deceit even in athletic contests.

6. Socio-economic Background. Deceit is definitely associated with the economic level of the home. Children whose fathers are engaged in occupations yielding the higher incomes are less deceptive than children of day laborers. When the occupations of fathers are classified in four levels, the children from the higher levels deceive the least, those from the second higher next, and so on to those of the lowest level, who cheat the most. When more detailed studies of the economic and social conditions of the home are made, the results show again that children from the higher socio-economic levels deceive less than children from lower socio-economic levels.

7. Cultural Background. Children who have better manners, who are better acquainted with art and music and the influences that indicate culture and refinement, and whose parents treat them decently are less deceptive than others who do not show these refinements.

8. Other Home Conditions.* Deceit is associated with such factors as parental discord, parental example, bad discipline, unsocial attitude toward the children, impoverished type of community, and changing social or economic situation; and certain combinations of these " handicaps " with personal handicaps tend to distinguish the group of most dishonest from the group of most honest children.

9. Nationality of Parents. Children of parents who were born in North Europe or America are less deceptive in classroom cheating situations than children of parents born in South Europe. Colored children cheat more than most of the white groups. Certain racial and national differences persist even when allowance is made for differences in intelligence and socio-economic level.

---

* Based on our study of 150 homes in one community.

10. Religious Affiliations. Between children reporting affiliation with the three main religious groups, Catholics, Jews, and Protestants, and between various Protestant groups, there are no *general* differences which are not attributable to differences in intelligence and social level; but on certain tests the particular groups measured show real differences not thus entirely accounted for.

11. Kinship. Deception runs in families to about the same extent as eye color, length of forearm, and other inherited structures. This does not prove that it is inherited. But the general drift of the evidence inclines one to believe that, if all children received identical nurture, they would still vary in deception.

12. Grade. In most tests there are no grade differences. In the IER school tests, there is a steady increase in deception from grades six to eight, but grade five is the most deceptive.

13. Grade Retardation. Children who are over-age for their grade tend to cheat more than those who are under the average age for their grade. The more intelligent in the grade or in the class group cheat less, and the less intelligent cheat more. It is probably not the fact of being over-age for one's grade that matters, but of being both older and also less intelligent.

14. School Achievement. Those who get high marks cheat slightly less than those who get low marks; but where their achievement is stated in terms of their mental age, there is no evidence of any relation between their academic status and their tendency to deceive.

15. Deportment. Deportment marks vary with the school and teacher, but on the whole high deportment marks are associated with less cheating in school and low marks with more cheating in school. Pupils who receive A in deportment cheat definitely less than those who receive C.

16. Associates. There is considerable resemblance in amount of cheating between classmates. That is, a pupil's cheating score on certain of the classroom tests is very much like that of his associates. There is a slight resemblance between friends even when they are not in the same class.

17. Suggestibility. Greater resistance to the sort of suggestion found in the Otis suggestibility tests is associated with less cheating.

18. Movie Attendance. Children who attend the movies more than once a week tend to cheat slightly more than children who attend occasionally but less than once a week.

19. Teacher Influence. The general relations that exist between the teacher and the class influence cheating. On the whole, there is less cheating when these relations are free and cordial and there is a spirit of good will and coöperation.

20. Progressive Method and Morale. The progressive schools tested do not cheat as much as most of the conventional schools tested. This seems to be due to the factor of school or classroom morale, for which the teacher is largely responsible but which also characterizes the whole school or class group from year to year.

21. Sunday-School Enrollment and Attendance. Those enrolled in Protestant Sunday schools cheat less than those not enrolled. There is no relation, however, between Sunday-school attendance and deception. Children who attend regularly cheat in day school about the same as those who rarely or never attend.

22. Membership in Organizations Purporting to Teach Honesty.* Children who belong to certain organizations purporting to teach honesty deceive about the same as (and in one case more than) children who do not belong. Furthermore, in one organization length of membership and rank achieved were positively correlated with deceptiveness.

23. Deceit Not a Unified Trait. The results of these studies show that neither deceit nor its opposite, "honesty," are unified character traits, but rather specific functions of life situations. Most children will deceive in certain situations and not in others. Lying, cheating, and stealing as measured by the test situations used in these studies are only very loosely related. Even cheating in the classroom is rather highly specific, for a child may cheat on an arithmetic test and not on a spelling test, etc. Whether a child will practice deceit in any given situation depends in part on his intelligence, age, home background, and the like and in part on the nature of the situation itself and his particular relation to it.

---

* Based on our study of systems X and Y.

24. The Motivation of Deceit. The motives for cheating, lying, or stealing are complex and inhere for the most part in the general situations themselves. The most common motive for cheating on classroom exercises is the desire to do well.

Summary. The concomitants of deceit are, in order of their importance, (1) classroom association; (2) general personal handicaps, such as relatively low IQ, poor resistance to suggestion, and emotional instability; (3) cultural and social limitations in the home background; and (4) such other miscellaneous facts as are loosely correlated with deception.

IMPLICATIONS

Any implications for moral education that arise from these studies of deceptive tendencies are obviously tentative and incomplete. We have not reported the relation of this type of social failure to its opposite, coöperative helpfulness, nor to the intellectual habits, the ideas, and information which are involved in any response that can be regarded as having moral significance. No conclusive experiments have yet been undertaken by which education in the particular forms of behavior under discussion, much less in character as a whole, has been successfully demonstrated.

Nevertheless, there are a few results that have a direct bearing on the evaluation of current practices and which are suggestive for the setting up of controlled experiments for the further study of problems of character growth. We shall state our interpretation of these results in the form of propositions.

1. No one is honest or dishonest by "nature." Where conflict arises between a child and his environment, deception is a natural mode of adjustment, having in itself no "moral" significance. If indirect ways of gaining his ends are successful, they will be continued unless definite training is undertaken through which direct and honest methods may also become successful.

2. Apart from the actual practice of direct or honest methods of gaining ends where a conflict of wills is actually involved, the mere urging of honest behavior by teachers or the discussion of standards and ideals of honesty, no matter how much such general ideas may be "emotionalized," has no necessary relation to the control of conduct. The extent to which individuals may be affected, either for better or for worse, is not known, but there seems to be evidence that such effects as may result are not generally good and are sometimes unwholesome.

3. This does not imply that the teaching of general ideas, standards, and ideals is not desirable and necessary, but only that the prevailing ways of inculcating ideals probably do little good and may do some harm.

4. The large place occupied by the "situation" in the suggestion and control of conduct, not only in its larger aspects, such as the example of other pupils, the personality of the teacher, etc., but also in its more subtle aspects, such as the nature of the opportunity to deceive, the kind of material or test on which it is possible, the relation of the child to this material, and so on, points to the need of a careful educational analysis of all such situations for the purpose of making explicit the nature of the direct or honest mode of response *in detail*, so that when a child is placed in these situations there may be a genuine opportunity for him to practice direct methods of adjustment.

5. Along with such practice of direct or honest responses there should go a careful study of them in terms of the personal relations involved, so that in the child's imagination the honest mode of procedure may be clearly distinguished from the dishonest mode as a way of *social* interaction, and the consequences of either method may be observed and used in evaluating the relative desirability of direct *versus* indirect procedures. Such analyses would provide the foundation for the understanding of social ideals and laws and the basis for an intelligent allegiance to such ideals as proved consonant with social welfare.

6. The association of deceit with sundry handicaps in social background, home condition, companions, personal limitations,

and so on indicates the need for *understanding* particular examples of dishonest practice before undertaking to " judge " the blameworthiness of the individual. As far as possible, such social and personal limitations should be removed, not only for the sake of getting more honest behavior, but for the sake of the child's whole development. But obviously the widespread practice of deceit makes the application of radical environmental changes an absurdity. There is no evidence for supposing that children who are more likely to resort to deceptive methods than others would not use honorable methods with equal satisfaction if the situation in which dishonesty is practiced were sufficiently controlled by those who are responsible for their behavior. That is, the main attention of educators should be placed not so much on devices for teaching honesty or any other " trait " as on the reconstruction of school practices in such a way as to provide not occasional but consistent and regular opportunities for the successful use by both teachers and pupils of such forms of conduct as make for the common good.

BOOK TWO

Statistical Methods and Results

CONTENTS OF BOOK TWO

CHAPTER PAGE

I. THE STATISTICAL APPROACH TO THE STUDY OF CHARACTER . 3

II. STANDARDIZATION OF TEST MATERIALS AND SCORING DEVICES . 12
(Referring to Chapters III and IV of Book One)

III. STANDARDIZATION OF THE PROCEDURE USED WITH THE IER TECHNIQUE 42
(Referring to Chapter IV of Book One)

IV. GENERAL STATISTICAL RESULTS OF ALL TECHNIQUES . . 53
(Referring to Chapter IV of Book One)

V. RELIABILITIES OF THE TESTS 88
(Referring to Chapter V of Book One)

VI. METHODS OF CORRECTING COEFFICIENTS OF CORRELATION FOR THE INFLUENCE OF ERRORS OF MEASUREMENT (FORMULAS 1 TO 7) 99

VII. VALIDITIES OF THE TECHNIQUES 106
(Referring to Chapter V of Book One) (Formulas 8 to 14)

VIII. THE RELATIONS OF INTELLIGENCE, AGE, AND SCHOOL STATUS TO DECEPTION 134
(Referring to Chapters VII and XII of Book One) (Formulas 15 and 16)

IX. DATA ON SOCIAL AND BIOLOGICAL CONCOMITANTS OF DECEPTION 159
(Referring to Chapters IX, X, and XI of Book One) (Formulas 17 and 18)

X. DATA ON TYPES OF SCHOOL EXPERIENCE AND DECEPTION . 179
(Referring to Chapters XV and XVI of Book One)

XI. DATA ON THE EFFECTS OF MORAL AND RELIGIOUS EDUCATION 197
(Referring to Chapters XVIII, XIX, and XX of Book One)

XII. DATA ON THE SPECIFICNESS OF CONDUCT, ATTITUDES, AND MOTIVATION 211
(Referring to Chapters XXI and XXII of Book One)

APPENDICES 245

INDEX 299

TABLES

TABLE PAGE

I. Distribution of Honest Coördination Scores 15

II. Distribution of Puzzle Scores 17

III. Statistical Constants for the SA Lying Test 18

IV. Comparing Forms A and B of Each Test (IER) for Difficulty, by Grades 22

V. Distributions of Non-Deceptive Differences on IER Material 23

VI. Relation of Ability on IER Tests to Gain and Loss . . 25

VII. Standardization Data for the Speed Tests 33

VIII. Interpreting D_2 Gains in Relation to D_1 Gains . . . 36

IX. Age Norms for Speed Xi Scores 38

X. Total Speed D_2 Xi Transmutation Table (Sample) . . 39

XI. Means and SD's of Presumably Honest Fluctuations on the Physical Ability Tests 41

XII. Experimental Results of IER Tests, Population A . 44–45

XIII. The Effect of Motives and Opportunities on Cheating . . 46

XIV. Relation of Motive Formulas to Deception 49

XV. Relation of Opportunity to Deception by Separate Tests . 50

XVI. Relation of Opportunity to Deception 51

XVII. IER School Tests, Population A 54

XVIII. IER School Tests, Population B 55

XIX. IER School Tests, Population C 56

XX. IER School Tests, Population K 56

XXI. IER School Test (Arithmetic Only), Population L . . 57

XXII. IER School Test (Arithmetic Only), Population M . . 57

XXIII. IER School Tests, Population P 57

XXIV. IER School Tests, Population Q 58

XXV. IER School Tests, Population R 58

XXVI. IER School Tests, Population S 59

XXVII. IER Home Test (Word Knowledge), Population A . . 59

XXVIII. IER Home Test (Word Knowledge), Population B . . 60

XXIX. IER Home Test (Word Knowledge), Population C . . 61

XXX. IER Home Test (Word Knowledge), Population F . . 61

XXXI. IER Home Test (Word Knowledge), Population G . . 62

XXXII. IER Home Test (Word Knowledge), Population H . . 62

TABLE		PAGE
XXXIII.	IER Home Test (Word Knowledge), Population I	62
XXXIV.	IER Home Test (Word Knowledge), Population J	63
XXXV.	IER Home Test (Word Knowledge), Population P	63
XXXVI.	IER Home Test (Word Knowledge), Population Q	64
XXXVII.	IER Home Test (Word Knowledge), Population S	64
XXXVIII.	Speed Tests, Population A	65
XXXIX.	Speed Tests, Population C	66
XL.	Speed Tests, Population D	66
XLI.	Speed Tests, Population E	67
XLII.	Speed Tests, Population F	67
XLIII.	Speed Tests, Population G	68
XLIV.	Speed Tests, Population H	68
XLV.	Speed Tests, Population I	69
XLVI.	Speed Tests, Population J	69
XLVII.	Speed Tests, Population L	70
XLVIII.	Speed Tests, Population M	70
XLIX.	Speed Tests, Population P	70
L.	Speed Tests, Population R	71
LI.	Speed Tests, Population U	71
LII.	Coördination Tests, Population E	72
LIII.	Coördination Tests, Population F	73
LIV.	Coördination Tests, Population G	73
LV.	Coördination Tests, Population H	74
LVI.	Coördination Tests, Population I	74
LVII.	Coördination Tests, Population J	75
LVIII.	Coördination Tests, Population L	75
LIX.	Coördination Tests, Population M	76
LX.	Performance Puzzles, Population D	76
LXI.	Performance Puzzles, Population R	76
LXII.	CT Ratio, Population C	77
LXIII.	CT Ratio, Population D	77
LXIV.	CT Ratio, Population F	78
LXV.	CT Ratio, Population G	78
LXVI.	CT Ratio, Population H	79
LXVII.	CT Ratio, Population I	79
LXVIII.	CT Ratio, Population J	80
LXIX.	CT Ratio, Population L	80
LXX.	CT Ratio, Population M	81
LXXI.	Athletic Contest, Population A	81
LXXII.	Athletic Contest, Population C	81
LXXIII.	Athletic Contest, Population D	82
LXXIV.	Party C's, Population C	82
LXXV.	Party C's, Population D	83

TABLE PAGE
LXXVI. Money Stealing Tests, Populations, C, D, and R . . 83
LXXVII. SA Lying Test, Population A 84
LXXVIII. SA Lying Test, Population C 84
LXXIX. SA Lying Test, Population D 85
LXXX. SA Lying Test, Population P 85
LXXXI. Lie Index, Population A 86
LXXXII. Lie Index, Population B 87
LXXXIII. Reliability Data for the IER Tests 91
LXXXIV. Corrected Reliability Coefficients for IER Tests . . 93
LXXXV. Intercorrelation of IER School Tests 94
LXXXVI. Reliability Data for the Speed Tests 95
LXXXVII. Reliabilities of Techniques Used for Measuring Deception 97
LXXXVIII. Reliability of Honesty Ratings 108
LXXXIX. Relation between Independent Honesty Ratings . . 109
XC. Relation between IER Tests and Honesty Ratings, School C 110
XCI. Relation between IER Tests and Honesty Ratings, School System B 111
XCII. Percentage Distribution of Ratings 116
XCIII. Validities of Techniques Used for Measuring Deception . 122
XCIV. Intercorrelations of Nine Types of Deceptive Behavior . 123
XCV. Variation of Reliabilities and Validities with Variation of Number of Tests, Where the Average Inter-r = .227 . 126
XCVI. Variation of Validities with Variation of Number of Tests, Where the Criterion Contains 31 Measures and the Average Inter-r = .227 127
XCVII. Data for Validation of Separate Deception Tests, School D 130–131
XCVIII. Data for Validation of Separate Deception Tests, School C 132
XCIX. Data for Validation of Separate Deception Tests, School R 133
C. Correlations between CAVI Scores and IER School Xi's . 136
CI. Correlations between Mental Ages and IER School Xi's . 136
CII. Correlations between CAVI Scores and IER Home Xi's . 138
CIII. Correlations between IQ's and Speed Xi's . . . 139
CIV. Correlations between Mental Ages and Coördination Xi's 140
CV. Correlations between CAVI Scores and Scores on the SA Lying Test 142
CVI. Summary of Correlations between Various Forms of Deception and Intelligence 143
CVII. Correlations between Age and Deception . . . 145
CVIII. Correlations between Age and Cheating on the Speed Tests 147
CIX. Relations of Age, Intelligence Test Score, Grade, and IER School Xi 149–150

TABLE		PAGE
CX.	Relations of Age, Intelligence Test Score, Grade, and Cheating on the Performance Puzzles	151
CXI.	Mean IER School Xi's by Age	152
CXII.	Mean IER School Xi's by Grade	153
CXIII.	Mean IER School Xi's by Grade and Intelligence	153
CXIV.	Partial Correlations between Age and Deception with Grade Constant	154
CXV.	Correlations between School Grade and Deception	155
CXVI.	Grade and IER School Xi	156
CXVII.	Grade and Speed Xi	156
CXVIII.	Grade and Home Xi	157
CXIX.	Median Amounts of Deception at Each Occupational Level, IER School and Home Tests	161
CXX.	Median Amounts of Deception at Each Occupational Level, Speed and Coördination Tests	162
CXXI.	Median CT Ratio and Intelligence at Each Occupational Level	163
CXXII.	Partial Correlations between Occupational Level and Deception with Intelligence Constant	164
CXXIII.	Sims Score and Cheating	165
CXXIV.	Correlation of Burdick Scores with Various Factors	166
CXXV.	Denomination and School Xi	168
CXXVI.	Denomination and Home Xi	169
CXXVII.	Denomination and Per Cent Cheating at School and Home	169
CXXVIII.	Comparison of Races and Nationalities in Respect to Cheating on IER School Tests	171
CXXIX.	Comparison of Races and Nationalities in Respect to the IER Home Test	171
CXXX.	Statistical Data on Sibling Resemblance in Deception	173
CXXXI.	Comparison of Progressive and Conventional Schools in Respect to Deception	180
CXXXII.	Comparison of Progressive and Conventional Schools with Respect to Age, Mental Age, IQ, and Home Background	181
CXXXIII.	Correlations between Cheating and CA, MA, IQ, and Sims Score	182
CXXXIV.	Deception in Schools L and M at Each Occupational Level	184
CXXXV.	School Differences in Deception	185
CXXXVI.	Certain Group Differences in IER School Xi	186
CXXXVII.	Certain Classroom Deception Means in Rank Order	187
CXXXVIII.	Classroom Speed Test Scores, Two Similar Metropolitan Public Schools in the Same Community	188

TABLE PAGE
CXXXIX. Classroom Speed Test Scores, a Third Metropolitan Public School 189
CXL. Classroom IER Arithmetic Test Scores, a Metropolitan and Mid-Western Public School 189
CXLI. Classroom Speed Test Scores, Two Experimental Schools 190
CXLII. Classroom IER Arithmetic Test Scores, Three Experimental Schools 190
CXLIII. Test of Presence of Factors Unequally Influencing the Deceptiveness of Classrooms 191
CXLIV. Records of Five Teachers, a Year Apart and with Different Children 192
CXLV. Records of Three Groups of Children, a Year Apart and with Different Teachers 193
CXLVI. Comparison of Six Teachers, Arithmetic Differences . 194
CXLVII. Gains and Losses in Deception Score of Five Teachers, Arithmetic Only 194
CXLVIII. Relative Deceptiveness of Five Groups of Children in Three Tests 195
CXLIX. Comparison of X and Non-X Boys, School C 198
CL. Comparison of X and Non-X Schools by Grades . . 199
CLI. Comparison of X and Non-X Schools by Sex . . . 200
CLII. Comparison of Groups in X Organization with Groups Not in X Organization by Grade and Sex . . . 201
CLIII. Comparison of 4 A and 4 B Groups in Same Schools . 202
CLIV. Comparison of the Different Ranks in the X Organization 203
CLV. Comparison of Grades and Schools by Number of Terms Spent in X Organization 204
CLVI. Comparison of Schools by Rate of Advancement in X Organization 205
CLVII. Correlations between Age, Length of Time in Each School, and Deception, on School Populations Matched for Age 205
CLVIII. System Y, Population A 206
CLIX. Comparing Y's and Others in Population C 206
CLX. Boys Belonging to Y and No Organization Matched for Age and IQ, Population E 207
CLXI. Comparison of Y's and Non-Y's in CA, IQ, and Deception 207
CLXII. Deception and Rank in Y 208
CLXIII. Deception and Time in Y 208
CLXIV. Deception and Rate of Progress in Y in Ranks per Term 208
CLXV. Results of an Effort to Teach Honesty — Speed Tests . 209
CLXVI. Results of an Effort to Teach Honesty — Coördination Tests 210

TABLE PAGE
CLXVII. Mean Ages, IQ's, and Sims Scores of Experimental and Control Groups 210
CLXVIII. Average Cross-Correlations between Single Tests of Different Techniques 212
CLXIX. Comparisons of Amounts of Cheating, by Techniques 215–216
CLXX. Comparison of Coördination Tests 218
CLXXI. Comparison of Speed Tests 219
CLXXII. Distribution of Cheating Ratios 220
CLXXIII. Results of Use of Deception Scale 227
CLXXIV. Mean Number of Changes Made in Scaled Tests . . 228
CLXXV. SD Values for Steps of Scale 229
CLXXVI. Correlations between Honest Score and Cheating on the IER Tests 239
CLXXVII. Amounts of Cheating and Amounts of Ability on the Completion Test 241
CLXXVIII. Correlations between Honest Score and Cheating on the Speed Tests 241

FIGURES

FIGURE PAGE
1. Scattergram of First- and Second-Day Honest Scores on the Arithmetic Test 26
2. Scattergram of First- and Second-Day Honest Scores on the Information Test 27

BOOK TWO

STATISTICAL METHODS AND RESULTS

CHAPTER I

THE STATISTICAL APPROACH TO THE STUDY OF CHARACTER

GENERAL USES OF STATISTICAL METHODS

The use of statistical methods in the treatment of quantitative data requires no defense. The two terms are almost synonymous. Quantity means amount, amount means enumeration of units, units imply measurement, and the subject matter of statistics is just enumeration and measurement. The questions, How many? and How much? are statistical questions.

The statistical problem, however, presupposes the answer to the question; How many *of what?* or How much *of what?* The things that are being counted or measured are qualitatively differentiated from other objects by description, definition, or classification, that is, by being pointed to; and this preliminary process is not statistical in any sense save as measurement may assist the process of classification.

Whether or not statistical methods are applicable to the study of character depends on the possibility of identifying groups of facts which may be counted or measured. Numerous theoretical problems arise at this point the answers to which lie beyond the scope of this report, as they are involved in the whole question of *what character is.* We have taken the position that, *no matter what it is,* the quantitative study of facts which must be taken into consideration when dealing with problems of either its definition or control cannot be honestly avoided. If certain of the facts that are proposed as suitable objects of measurement turn out to be unrelated to any particular concept of character, they doubtless will be found relevant to some other concept of character. By restricting ourselves to problems of social moment or of concern to the welfare of the individual, we shall in all probability be contributing to our knowledge of human nature and its education whether or not the results classify under this or that term. For the purposes of this study, we shall use the term " character " to indicate the subject matter under investigation.

With this general point of view to guide us, we have proceeded deliberately to isolate for special study the four sets of facts enumerated in the introduction, *viz.:*

1. Mental contents and skills
2. Attitudes, desires, motives, purposes
3. Overt conduct
4. The relations of these factors to one another and to social-self-organization, including inhibition and self-consistency

Of each class of facts only samples could be chosen for our investigation. These were selected, not at random, but because of their *apparent* importance and their susceptibility to quantitative practice. Their *actual* importance could be discovered only by statistical methods.

The first general use of statistics in character study, then, may be regarded as exploratory, to determine what facts are important in relation to other facts already regarded as important. What is the significance of the behaviors and tendencies measured, for such larger facts as social adjustment, vocational success, community welfare? Only by the use of statistical procedures can such a question be answered.

The second contribution of statistics to a study of this kind is of precisely the same nature as the one just mentioned except that the problem is reversed. We ask, What is the significance of sundry social and biological facts for the formation of character? Here again, statistical processes offer the only sound approach to scientific conclusions. Their availability, however, depends on whether these social and biological facts can be themselves counted or measured. Some of them can, as our report endeavors to demonstrate. Consequently their interrelations with " character facts " may be determined by the relatively simple method of correlation.

In the third place, statistical procedures greatly expedite and simplify the process of experimental education. The history of scientific education reveals the fact that progress has been contemporary with measurement. In the past twenty-five years great improvement in the teaching of certain of the common school branches has taken place, notably in the teaching of reading. This progress has been due in part to the fact that the results of teaching efforts in these subjects could be measured. This intimate relation between progress in method and progress in measurement holds true also of character education. We cannot hope for rapid and substantial gains in the procedures of character education until we are able to measure their products.

Fourth, social control on a broad scale, whether through legislation, popular adult education, or propaganda, depends for its success on knowledge of motives and attitudes of large population groups as well as on knowledge of social need. Extensive studies of this sort can be made intelligible and reliable only by the use of statistical methods.

Fifth and finally, the ultimate need in character testing is for instruments which will not be spoiled by advance knowledge of their purpose. To announce to a group, or for the group to suspect, that it is to be tested for honesty, or good will, or what not at once vitiates the results of the whole procedure. One solution of this difficult problem is to discover by test or otherwise a series of facts that will correlate .90 or more with the original battery of direct measures.* Such a series of facts or test results could be discovered only by statistical procedures.

TYPES OF STATISTICAL PROBLEMS INVOLVED IN THE STUDY OF CHARACTER

Every scientific inquiry develops problems peculiar to itself in addition to those it has in common with other inquiries. In the measurement of character and the treatment of the results, we encounter certain problems that are not usually found in current educational measurements. These problems may be classed as (A), problems of measurement, and (B), problems of evaluation of results.

---

* To what extent this is already possible with tests of deception will be pointed out later.

A. Problems of Measurement

Problems of measurement in mental and social sciences are ordinarily of three types. First, there are the problems involved in the invention and construction of instruments of measurement; second, there are the problems of determining the amount of error in applying the instrument (reliability); and third, there are the problems of determining how well the instrument measures the thing it was constructed to measure or that it claims to measure (validity). In character testing each of these problems presents certain peculiarities. Since three chapters of this book will be devoted to the discussion of the second and third of these problems they will not be taken up here.

A rather detailed description of current instruments for measuring character objectively is given by the authors in an article on "Objective Methods of Measuring Character," * the main points of which may be summarized as follows:

The first step in the invention of an instrument for the measurement of anything is to find a simple variable that correlates perfectly with a more complex one. For instance, amounts of heat present in a given volume of atmosphere correlate perfectly with the expansion of mercury in a tube. This fact makes the thermometer possible. The observation by Galileo that a swinging chandelier requires a constant time for a complete oscillation, regardless of the length of the arc, suggested the use of the pendulum as a device for measuring time. For the purposes of measurement, human conduct may be regarded as complex responses to complex situations. The problem of securing a test is that of finding simple and controllable situations the responses to which

---

* *Pedagogical Seminary,* Volume XXXII, No. 1, pp. 45–67, March, 1925. The remainder of this section is quoted in part from this article, with the permission of the publisher.

are highly correlated with, or symptomatic of, behavior in a wider range of situations or more complex situations. Generally speaking, the more closely a test of conduct resembles the behavior that we are studying, the more symptomatic it will be of this behavior. The term that is usually applied to this characteristic of a test to stand for a much wider area of experience is "validity." A valid test is one that may serve as an adequate substitute for other accurate but more difficult or arduous ways of discovering the same thing.

In any test a situation is set up by the examiner to which the subject makes a response. All life may be thought of as interconnected and highly complex situation-response elements. To the situation "apple-in-sight" the normal child responds by efforts to reach and eat the apple. We may find out whether a child likes apples by waiting for some occasions when apples come naturally within his field of vision, or we may ourselves get hold of a few apples and deliberately put them where the child can see them. The second method, if managed properly, would probably determine very quickly all that the first method could tell us over an extended period of time, particularly if we wanted to learn the child's preferences among various kinds of apples. We have introduced an element of control into the natural situation of seeing an apple and have thus transformed it into a test. The test situation is both natural and controlled. We might still further limit the situation and, instead of providing the child with real apples, show him some bottles of perfume which had the exact odors of a Baldwin, a Porter, a Jonathan, and a Snow apple respectively and ask him to decide which kind of apples he likes best by smelling their characteristic fragrances. We should call this an experimental rather than a natural situation.

We have given illustrations of three kinds of situation:

A. Natural, uncontrolled (real life)
B. Natural, controlled
C. Experimentally controlled

Similarly we think of three types of response. When a boy hunts around in the orchard for the apple of his eye, to pick it up and eat it is his natural and quite undirected response. If in our first test situation, where we confronted him with several apples, we had told him to indicate his preference by smelling or biting or cutting or eating the apple of his choice, any one of these responses would have been natural, but it would also have been directed. If in the same situation or in the one where only the apple odors were presented we had asked this very self-restrained boy to draw a picture of the apple which most appealed to his taste or to turn on a red light when his most cherished brand appeared as either an image or a perception, this response would have been, in the circumstances, somewhat unnatural. If carefully directed, we should call it an experimental response. So we have three types of response corresponding to the types of situation:

X. Natural, undirected
Y. Natural, directed
Z. Experimentally directed

Since we have three situations and three responses, we can have them in nine situation-response, or S-R, pairs as follows:

1. Sa-Rx
2. Sa-Ry
3. Sa-Rz
4. Sb-Rx
5. Sb-Ry
6. Sb-Rz
7. Sc-Rx
8. Sc-Ry
9. Sc-Rz

As has already been noted, the first combination, Sa-Rx, is just ordinary conduct. It is the free and spontaneous response of an individual to life situations as they occur. To measure this is the aim of all tests. But it is not itself test behavior and does not lend itself to the testing technique. It can only be observed and classified. It may, however, be observed in systematic ways, and the results of such observations and classifications may be arranged on a scale of arbitrary units. Handwriting scales and English composition scales are illustrations. Some progress in the construction of conduct scales has been made in the Upton-Chassell scale for measuring habits of school citizenship. Various devices have been made for the systematic observation of behavior and classification of results.

The remaining combinations are "tests." They get farther and farther away from the real life behavior of Sa-Rx, and so are less and less symptomatic of it, or less valid as tests. Their validity may be roughly predicted from the type of S-R combination in which they classify. Arranged in order of their raw symptomatic value, or probable validity, our S-R combinations, at a guess, are as follows:

1. Sa-Rx — real life situation
2. Sb-Rx — natural, undirected response to natural, controlled situation
3. Sa-Ry — natural, directed response to natural, uncontrolled situation
4. Sb-Ry — natural, directed response to natural, controlled situation
5. Sa-Rz — experimentally directed response to natural, uncontrolled situation
6. Sb-Rz — experimentally directed response to natural, controlled situation
7. Sc-Rx — natural, undirected response to experimentally controlled situation
8. Sc-Ry — natural, directed response to experimentally controlled situation
9. Sc-Rz — experimentally directed response to experimentally controlled situation

The techniques to be described, whether our own or others', may all be classified according to this S-R scheme. The bulk of existing educational tests is in the last group — Sc-Rz. Both the situation and the response are experimental. The situations are those that the subject is not likely to meet except under test conditions, and the responses are those not likely to be made except under test conditions. The chances are not one in a lifetime that a child would be confronted with a piece of paper containing lists of five words each and told to cross out the worst word in each list, except under test conditions. This thing probably never happened in just this way in the history of the world until Pressey invented his tests of emotional aberration. The same thing could be said of practically all paper and pencil character tests.

The fundamental question in character testing is whether or not we can bridge the gap between test situations and responses and life situations and responses. It is ultimately a question of prediction of conduct from test performance. We have called this predictive value the " raw symptomatic value " because the actual symptomatic value can be found only by a process of validation consisting of comparison between the results secured from the tentative tests and those secured by other tests already validated or by controlled observation of Sa-Rx behavior. Prediction thus depends on correlation, but from lack of adequate measures correlations are frequently unreliable. Obviously, the more closely the laboratory or test conditions approximate life situations and the more closely test responses approximate life responses, the more valid the test becomes. But as we push up the validity scale from the Sc-Rz type toward the Sa-Ry, testing becomes increasingly difficult and impracticable. The Sc-Rz, or experimental, type is not to be despised, therefore. If it *can* be found to be highly symptomatic of Sa-Rx behavior, it is greatly to be preferred to the more cumbersome tests of, say, the Sb-Rx type. The purpose of testing, as was noted at the beginning of this discussion, is to do quickly and readily what it would otherwise take a long time to do.

The second problem in test construction is that of units of measurement. For the time being we have not attempted to secure anything like truly psychological units but deal in conventional statistical units. Throughout this work the unit is always the standard deviation of a distribution of the scores of a supervised population. This problem will be handled in detail in Chapter II of this book.

B. Problems of Treatment of Results

Most of the problems of tabulation and correlation involve simple, straightforward statistical methods, such as computing medians, means, standard deviations, coefficients of correlation, partial correlation, and the like. Certain difficulties arise from the fact that our test scores are differences between raw scores and contain usually both plus and minus quantities. Our chief difficulties, however, concern the correction of our correlations for certain peculiar types of error which are inherent in the nature of the testing techniques. These are discussed in Chapter VI. Similarly, problems relating to the statistical treatment of sibling resemblances are taken up in Chapter IX.

CHAPTER II

STANDARDIZATION OF TEST MATERIALS AND SCORING DEVICES

In Chapter III of Book One all scoring plans are described in a general way. The statistical procedures on which these plans are based will be presented here.

THE DUPLICATING TECHNIQUE

Scoring the duplicating technique is simple and straightforward. The deception score is the number of changes the pupil made in his paper while correcting it. A single change not affecting the correctness of the answer is not counted. It is probably true that each change is not an equal unit of deceptiveness, and the total score should not be regarded as such, but merely as so many surreptitious changes the significance of which in terms of character remains to be determined.

THE IMPROBABLE ACHIEVEMENT TECHNIQUE

The improbable achievement technique consists in setting a difficult task in which a given level of success is highly improbable, yet in which such a level may be reached by deceiving or faking. Or the task may be a simple one, but the conditions under which it is to be done may be such that honest achievement is improbable. Threading a maze with the eyes closed, solving a difficult puzzle in a short time, overcoming the fatigue effects of gripping a hand dynamometer are examples of the situations used. In all tasks it is possible and quite probable to achieve a degree of success honestly. The statistical problem is to determine the limits of honest success or, more exactly, to determine the probability of varying degrees of honest success.

The first step in the process is to determine experimentally the frequencies of different levels of achievement when the tests are given under conditions that do not permit cheating. This we call the " standardization of the test material." In giving the tests under " honesty " conditions in order thus to standardize the material, it is necessary to use populations of children of the same age ranges, the same intelligence ranges, and the same general social and economic levels as those to whom the tests are to be applied. Tests given to such populations under supervised or " honesty " conditions yield distributions of scores which are frequency distributions of honest successes. The means of such distributions are taken as the *points of reference* from which all subsequent scores secured under " cheating " conditions are considered as deviates. The unit of measurement in each case is the standard deviation, or sigma, of these distributions of honest successes.

In order to distinguish this type of sigma score from a score expressed in multiples of the standard deviation of its own distribution, we have consistently used for it the term Xi score, meaning the individual's deviation from the mean of the honest scores divided by the standard deviation of the honest scores. The signs are handled so that a cheating score is negative and an honest score positive.*

The advantages of this scheme are numerous. In the first place, it gives a definite meaning to all scores. A score of zero means that the pupil's success in the task is the same as the mean of the group which did the task under "honesty" conditions; a score of 3.0 Xi means that the subject deviated from the honest mean three times the standard deviation of the " honest " distribution.

A second advantage of the scheme is that all cheating scores are comparable, or at least as comparable as statistical techniques can make them. Cheating scores on one test may be added to those on other tests.

---

* As this report deals only with deception, it was not deemed necessary to change these Xi scores into sigma scores.

A third advantage is that all scores may be expressed in terms of the probability of honest success. This, of course, is based on the assumption that the "honest" distributions are normal. Most of our distributions approximate the normal curve more than any other type. Tables of the normal probability integral corresponding to $\frac{x}{\sigma}$ values will give at once the probability of honest success for each Xi score.* Thus if the cheating score is zero, the chances of honest success are even, or 500 in 1000; but if the cheating score is -3.0 Xi, the chances of honest success are 1.35 in 1000, etc. On the other hand, if the cheating score is $+3.0$ Xi, the chances of honest success are 998.65 in 1000.

This, in general, is the method used. Its application to the various techniques will now be described.

A. Standardizing the Coördination Tests

The Coördination tests, as stated in Chapter III, Book One, are modifications of certain tests used by Voelker and Cady. We used three of them, Circles, Squares, and Mazes. Each test was given to 290 public school children under conditions that did not permit cheating. The papers were scored as described in Chapter III, Book One. The distributions of these honest scores, together with their means and SD's, are given in Table I.

These distributions are somewhat skewed, yet they approach the normal sufficiently to justify using our technique with them. We shall discuss later the difficulties encountered in assigning Xi scores on separate tests and then adding them to get a total Xi. Unless the correlations between the honest scores are zero, the total Xi does not have the same probability as the sum of the probabilities of the separate test Xi's. For this reason we found it best to make a distribution of total honest scores, compute its mean and SD, and calculate the total Xi scores from it. These are shown in

---

* It is true, of course, that a distribution may "look" normal and actually test normal by the usual criteria and still not be normal on account of the peculiar character of the units constituting the base line.

Table I. Xi scores for separate tests may also be computed from Table I.

TABLE I

Distribution of Honest Coördination Scores

Mazes		Squares		Circles		All Three	
Score	Frequency	Score	Frequency	Score	Frequency	Score	Frequency
				15	1		
30–32	2	14	1	14	1		
27–29	3	13	2	13	1		
24–26	12	12	1	12	4		
21–23	15	11	8	11	2	33–35	3
18–20	38	10	8	10	12	30–32	9
15–17	44	9	8	9	10	27–29	10
12–14	67	8	15	8	15	24–26	21
9–11	53	7	25	7	23	21–23	42
6–8	40	6	32	6	48	18–20	46
3–5	9	5	40	5	46	15–17	53
0–2	4	4	43	4	41	12–14	51
		3	42	3	47	9–11	32
		2	38	2	23	6–8	14
		1	22	1	8	3–5	3
		0	4	0	2		
	287		289		284		284
Mean M/2	14.17 7.08		5.26		5.71		17.85
SD SD/2	5.66 2.83		2.71		2.25		6.12

We have in every case given a *fact score* for each separate test. This *fact score*, as indicated in Book One, is any score which equals or exceeds − 3.0 SD from the mean of the distribution of honest scores. These 3 sigma "deadlines" are so drawn that cheating is presumed to begin with the following scores: Mazes, 32; Squares, 14; Circles, 14.

B. STANDARDIZING THE CLASSROOM PUZZLE PERFORMANCE TESTS

Three puzzles were used as described in Chapter III, Book One, *viz.*, the Peg Puzzle, the Fifteen Puzzle, and the Weight Discrimination test. We discontinued the use of the last and so did not attempt to standardize it.* The Puzzle Peg and the Fifteen Puzzle were given to two populations, one relatively honest and one relatively dishonest.

When these two schools were combined, the resulting distribution was sufficiently bimodal to justify our estimating from it the

---

* The Weights Discrimination test (lifted weights experiment) was not standardized because of difficulties in administering it. If the weights to be arranged in order were all the same, it would really need no standardization because we could compute at once the chances of a correct order. If there are seven weights to be arranged in order and if the weights are all the same, the chances of a correct order are one in factorial seven. But there was an average difference of about .1 gram in our successive weights, the lightest one weighing 3.6 grams and the heaviest 4.2 grams, which made a difference of .6 gram between the lightest and heaviest. This gives a "relative difference limen" between the lightest and each successive weight respectively as follows:

$$2-1,\ \frac{.1}{3.6}=\frac{1}{36} \qquad 5-1,\ \frac{.4}{3.6}=\frac{1}{9}$$

$$3-1,\ \frac{.2}{3.6}=\frac{1}{18} \qquad 6-1,\ \frac{.5}{3.6}=\frac{1}{7}-$$

$$4-1,\ \frac{.3}{3.6}=\frac{1}{12} \qquad 7-1,\ \frac{.6}{3.6}=\frac{1}{6}$$

Whipple's norm (see Whipple, *Manual of Mental Tests*, Part I, p. 226) is, for eighth-grade boys, about $\frac{1}{17}$. But this norm is computed from a standard weight of 80 grams. Weights as light as those used by us are really outside the range of applicability of Weber's law.

We tried out our weights extensively with our adult office force and found that one or two clerks out of twenty could distinguish the top, middle, and bottom weights more frequently than chance would account for, and four or five could tell the heavy end from the light end of the series. Assuming that the latter is possible for our subjects, we would have as our estimate of probable achievement one in factorial five. But since two trials are allowed, this is reduced to about one chance in fifty of getting one or the other trial correct and one chance in 5000 of getting both correct. On such complications as these, the table of values for the relative success, which is printed in Chapter III of Book One, was prepared, with full recognition of its arbitrary character.

limits of honest ability and an approximation to a sigma unit. This distribution was as given in Table II.

TABLE II

Distribution of Puzzle Scores, Populations D and R

Score on Puzzles	Frequency
19	24
18	22
17	11
16	12
15	7
14	7
13	5
12	11
11	18
10	16
9	37
8	29
7	22
6	23
5	23
4	19
3	8
2	12
1	8
0	11

Assuming for our purposes that the scale from 0 to about 14 or 15 represents honest ability, we estimated a mean of 7 and an SD of 3.3 as our basic measures. All scores were thus translated into Xi's by subtracting 7 and dividing by 3.3. For the further use of these tests more elaborate standardization processes are under way.

C. Standardizing the Lying Tests

The SA lying test consists of two forms or sets of questions about conduct. The questions are about deeds or activities that are conventionally approved or disapproved, in which the conduct of most children is commonly unconventional. There are 36 questions on each form. It is extremely unlikely that any child could answer all these questions in the approved manner without lying. Lying on these tests then becomes a matter of probability. The problem is to determine the probability of the honesty of any given score.

To do this, it was necessary to get a distribution of honest scores on each form. We asked 150 mature graduate students to aid us in doing this by answering the questions honestly in the light of their childhood experiences. All papers were anonymous, and the full purport of the experiment was explained. The distribution of their scores was used as the honest standard. The mean and SD of the distribution on the two forms are given in Table III.

TABLE III

STATISTICAL CONSTANTS FOR THE SA LYING TEST

	FORM I	FORM II
Mean	11.1	12.34
SD	4.25	5.15
Honest limits (M + 3 SD) . .	23.8	27.8
Cheating score . .	24 or more	28 or more

D. THE PARTY TESTS AND MONEY TESTS

The Bean Relay offered no statistical obstacles. The competitor was supposed to pick up one bean at a time and bring it to the home box. Any difference between the number of runs and the number of beans collected is evidence that on at least one run more than one bean was picked up, which was contrary to rule. This of course might happen accidentally or honestly, but advantage taken of such an accident would make a competitor win on false grounds. How frequently an honest discrepancy between beans and runs occurs is not known.

In the case of the tail-pinning game, where cheating consisted in peeping under the blindfold and so seeing one's way to the donkey, we have again no evidence of the probability of honest achievement. This could be found out, however, by padding the eyes of a population selected for purposes of standardization. In our cases there was such a wide difference between those who succeeded and those who did not and the tails and arrows were placed so exactly by those who came close to the mark that it seemed possible to make a clear distinction between the cheaters and non-cheaters.

The Mystery-Man game gave each child a chance to keep a dime or return it. The only problem of probability here is in making the record, as the test is not self-recording, like those already described.

Similarly, the Magic-Square and Coin-Counting tests used as stealing tests are matter-of-fact opportunities to keep money. Here the record is preserved in the condition of the box when it is returned to the examiner. The only loophole is in the accuracy of checking the boxes before and after the test.

THE DOUBLE-TESTING TECHNIQUE

As explained in Chapter III, Book One, the double-testing technique requires that each pupil be tested twice, once under strictly supervised conditions, or "honesty" conditions, and once under conditions permitting cheating. The *difference* between the two scores contains the raw cheating score. But before this score can be interpreted, a standard group must be tested *twice* under strictly supervised conditions.

The difference between this method and the improbable achievement technique may be made clear by illustration. Suppose that the peeping or Coördination tests had been given twice to each child, once under supervised conditions and once under " cheating " conditions. The raw cheating score for each pupil would then be the *difference* between his two performances. As the Coördination tests now stand, the raw cheating score is the achievement score on the test under "cheating" conditions. In this *improbable achievement* technique the Xi cheating score is always the SD difference between the *score* achieved by the pupil when he had a chance to cheat and the *mean honest score of the standard group;* in the *double-testing technique* the Xi cheating score is the SD difference between the *difference* of the subject's honest and dishonest achievement scores and the *mean of a distribution of honest differences obtained on the standard group.* In one case the raw score is the difference between an achieved score and the mean of standard honest achievement; in the other case it is the difference between a difference of two scores, one of which was obtained when chance to cheat was given, and the mean of a distribution of differences when both tests were supervised. Or again, in the former case, the honest standard is a distribution of gross achieved scores; in the other case the honest standard is a distribution of differences between two honest achievement scores.* Of the two, the double-testing procedure is much more precise and much more statistically reliable, largely because it takes into account errors of measurement. But it is these very errors of measurement that provide all the statistical difficulties involved in applying this technique. We shall discuss these difficulties at some length because this is our most important method and the one with which we have collected most of our data. To make the discussion concrete, we shall

---

* The distinction between these techniques may be stated in terms of symbols as follows:

Let S_1 = honest scores of standard group, 1st test
Let S_2 = honest scores of standard group, 2d test

Let $M(S_2 - S_1)$ = the mean of the differences between them
Let $SD(S_2 - S_1)$ = the standard deviation of this difference

Let H = the score obtained by any pupil under supervised conditions
Let C = the score obtained by any pupil under "cheating" conditions

The double-testing technique Xi cheating score is then

$$\frac{(C - H) - M(S_2 - S_1)}{SD(S_2 - S_1)}.$$

The improbable achievement Xi cheating score is $\frac{C - \text{Mean } S_1}{\text{SD of } S_1}$.

now describe the standardization of the IER test material for our purpose.

STANDARDIZING THE IER CHEATING TESTS

A description of the IER cheating tests is contained in Chapter III, Book One, together with a brief account of its standardization. A more complete statement will be necessary as a background for understanding the statistical problems involved.

Pupils in grades five to eight in a city public school were given both forms of each test under conditions as similar as we could make them. Great care was taken to see that no pupil copied from any other or cheated in any way. On a Tuesday half of the pupils took form A and half took form B of each test, the papers being staggered or distributed alternately. On Thursday of the same week each pupil took the form that he did not take on Tuesday. This procedure gave a check on the relative difficulties of each form of the various tests and furnished data for determining their reliabilities.

The first question to settle was whether or not there is any difference in difficulty between forms A and B of each test. This is important because in this experiment some of the pupils had form A and some had form B on the first day. When we came to use these tests as deception tests, all pupils would have form A the first day. If we found no differences in the difficulties, then we would go ahead and compare the first-day score with the second-day score regardless of which form was taken first. Since we are not concerned here with the performance of individuals, we may compare groups. The facts are presented in Table IV.

In every test except the Word Knowledge, the means of the total groups taking the tests are almost exactly the same. This does not mean of course that all scores were the same on both forms, but that the gains and losses balanced one another. Since there are more than twice as many elements in the Word Knowledge test as in any other, a discrepancy of two points in the mean score may be ignored. The slight discrepancies in some of the grades may

TABLE IV

COMPARING FORMS A AND B OF EACH TEST FOR DIFFICULTY, BY GRADES

TESTS	GRADE 5		GRADE 6		GRADE 7		GRADE 8	
	Mean Form A	Mean Form B	Mean Form A	Mean Form B	Mean Form A	Mean Form B	Mean Form A	Mean Form B
Arithmetic	19.88	20.68	26.80	26.26			34.64	34.32
Completion	19.20	19.30	21.02	21.94	24.28	24.68	26.10	27.70
Information	8.00	8.34	10.42	10.59	13.54	13.21	14.70	15.52
Word Knowledge	26.64	27.28	34.32	33.52	46.64	43.68	56.48	52.44

TESTS	GRADES 5 TO 8				
	Mean Form A	Mean Form B	NUMBER OF CASES		ELEMENTS
			Form A	Form B	
Arithmetic	28.27	28.31	365	365	55
Completion	23.10	23.96	379	385	55
Information	12.27	12.65 *	411	419	28
Word Knowledge	44.09	41.82 *	415	421	120

* These are the largest differences found in terms of the total number of elements in the test. The Information difference is 1.36 times its standard error, and the Word Knowledge difference is 1.95 times its standard error.

also be ignored, for if the number of cases were increased these would presumably disappear. From now on we may disregard the factor as to which form was taken first and talk about first-day scores as form A and second-day scores as form B even though half the pupils in the standardization group had form B on the first day.

The next problem was to determine the actual differences between the *first-day* scores (either form) and the *second-day* scores (either form) obtained under strictly supervised conditions because later, as already indicated, we should have to use differences as measures of deception. Table V presents the distributions of these "honest" differences.

When we used these tests as *tests of deception*, we gave form A on the first day and allowed each pupil to correct his own paper

TABLE V

Distributions of Non-Deceptive Differences on IER Material

Gain or Loss	Arithmetic Frequency	Completion Frequency	Information Frequency	Word Knowledge	
				Gain or loss	Frequency
+ 13			1		
+ 12			0		
+ 11	2	1	0	+ 31–33	1
+ 10	1	0	1	+ 28–30	2
+ 9	3	1	1	+ 25–27	2
+ 8	2	5	5	+ 22–24	5
+ 7	2	5	8	+ 19–21	3
+ 6	14	11	19	+ 16–18	16
+ 5	20	17	19	+ 13–15	31
+ 4	19	20	24	+ 10–12	26
+ 3	57	32	37	+ 7–9	39
+ 2	31	36	37	+ 4–6	64
+ 1	57	47	48	+ 1–3	69
0	45	42	53	− 0–2	38
− 1	30	43	36	− 3–5	49
− 2	20	37	34	− 6–8	22
− 3	28	25	31	− 9–11	14
− 4	6	15	16	− 12–14	9
− 5	9	10	14	− 15–17	5
− 6	2	10	10	− 18–20	2
− 7	2	6	2		
− 8	2	3	1		
− 9		1			
− 10		2			
− 11		0			
− 12		1			
Mean	+ 1.06	+ .19	+ .61		+ 3.31
SD	3.10	3.52	3.37		8.48

with a key. On the second day we used form B without the key. Hence a loss on the second day indicated deception. But how great a loss? A glance at Table V tells us that when both forms were taken without keys a loss as great as eight points on Arithmetic occurred, as great as twelve on Completion, as great as eight on Information, and as great as twenty on Word Knowledge. Hence a loss of more than these amounts on the various tests should indicate that deception had taken place. The means of the distributions in Table V were used as points of reference and the SD's as units of measurement in determining the Xi cheating scores on these tests. To facilitate the work, a transmutation table was constructed from which Xi scores could be read off directly from raw differences. Thus in the case of the Arithmetic test Table V shows a mean gain on the second day of 1.06 points or problems, with an SD of 3.1 problems. A gain of 1 is put equal to zero, and a difference of zero equal to − 1, a loss of 1 equal to − 2, etc. Each of these is divided by 3.1. A section of the computation table reads as follows:

ACTUAL DIFFERENCE	EQUIVALENT XI SCORE
+ 1.0	− 0.0
0.0	− .32
− 1.0	− .64
− 2.0	− .97

This table is extended in both directions from zero to cover all differences that are likely to occur. It may be noted in Table V that the biggest honest loss on the Arithmetic was − 8, which has an Xi value of − 2.90. The next difference, − 9, has an Xi value of − 3.23, which means that such a difference deviates more than 3 SD from the mean and hence is taken as indicating cheating. (See Book One, Chapter III.) Similar tables are made for the other three tests.

A. DIFFICULTIES ENCOUNTERED

1. The Problem of Test Ability in Relation to B−A Differences. The method of handling these B−A differences, which has just been described, is beset with certain difficulties. The most serious is that differences at various levels of achievement may have different deceptive values. Thus the following two differences are numerically identical but may not indicate the same probable degree of cheating:

Score on Form A	Score on Form B	Difference	Xi Score
20	10	− 10	− 3.56
50	40	− 10	− 3.56

Thorndike has shown that errors of measurement reduce the correlation between initial score and gain when two forms of a test are given; that is, the correlation between A and B − A will be more negative than would be the case with perfect measures. This is true with our material, so that a pupil scoring high on the first form is more likely to lose than gain on the second form, and one scoring low on the first form is more likely to gain than lose on the second. Thus a difference at high levels of achievement would be more indicative of error and less indicative of deception than the same difference at low levels of achievement. The data bearing on this point are given in Table VI.

TABLE VI

Relation of Ability on IER Tests to Gain and Loss

Test	r_{AB}	$r_{A(B-A)}$	σ_A	σ_B	σ_{B-A}	Maximum Score
Arithmetic	.922	− .238	7.92	7.84	3.10	55
Completion	.769	− .426	5.16	4.76	3.52	55
Information	.659	− .451	4.11	3.93	3.37	28
Word Knowledge	.865	− .326	16.05	15.36	8.48	120

These data were all obtained from the standardization experiment, in which both forms were given under supervised conditions. The column headed "r_{AB}" gives the reliability coefficients, or the correlations between the first day and the second day of each test. The column headed "$r_{A(B-A)}$" shows the correlations between initial score and gain. In all but the Arithmetic test the correlations between initial score and gain are high enough to cause difficulties. That they are due to errors of measurement is shown by the fact that they are associated with the lower reliability coefficients. Indeed the relation between reliability coefficients and such correlations is readily seen from this:

$$r_{A(B-A)} = \frac{r_{AB} \cdot \sigma_B - \sigma_A}{\sigma_{(B-A)}},$$

which is negative when σ_A is greater than $r_{AB} \cdot \sigma_B$. If σ_A and σ_B are approximately equal, then the smaller r_{AB}, the greater will be the negative $r_{A\,(B-A)}$. This points to the need of material of high reliability for use with this technique. The low reliability of the Information test is no doubt due not to the nature of the material, but to the length of the test. A comparison of the SD's shows this to be the case.

We may conclude, then, that our method of scoring the cheating difference is liable to rather serious errors in the case of those having high or low honest test scores.

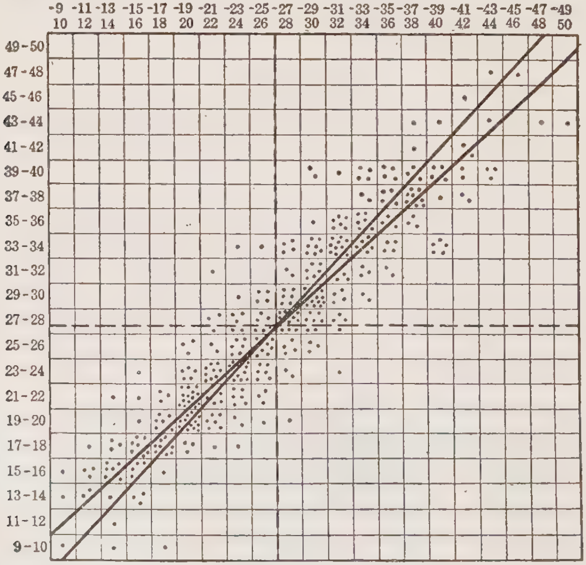


FIGURE 1

Scattergram of First- and Second-Day Honest Scores on the Arithmetic Test

One would suppose that we could overcome this difficulty by using the regression line, or the means of the arrays of honest scores, as points of reference and the SD's of the arrays as units. We considered doing this very thing and in fact tried it out, but we abandoned it because it involved difficulties more serious than it avoided. These difficulties appear when we examine the scattergrams of the reliability correlations. Two are presented in Figures 1 and 2, which show graphically the results from the Arithmetic and Information tests.

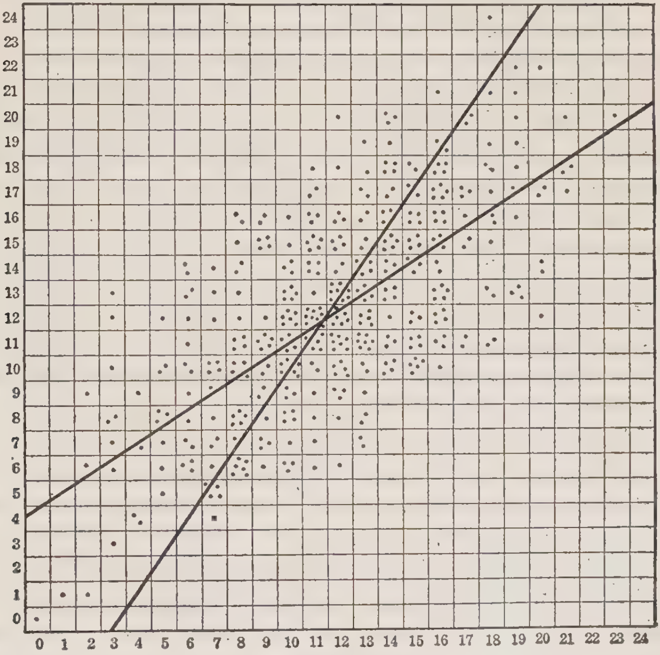


FIGURE 2

Scattergram of First- and Second-Day Honest Scores on the Information Test

If the regression line were to be used for obtaining points of reference, we should have to choose which form of the test to take as the independent variable. Obviously we could take either; perhaps the second day, or form B, would be better because, when the cheating tests are given, the second day's test (form B) yields the honest record. It would make considerable difference which we took, especially if the correlation is less than .85. In the Arithmetic plot shown in Figure 1, where the r is high, it will be seen that the two regression lines are almost superimposed (they would be exactly superimposed if the correlation were 1.00), but in Figure 2, where the r is .659, the angle between them is very much larger. In the Arithmetic test both regressions would give practically the same result; in the case of the Information test they would give quite different results. Suppose, for example, that an individual has a score of 26 on the first day of the Information test, when the key was used, and 18 on the second day, when no key was used. If we considered the first day's score as the independent variable and predicted the most likely second day's score from it, on the assumption that he was honest on the first day, we should use the regression equation $S_2 = .63\ S_1 + 4.91$, which for a given first-day score of 26 gives a most probable second day's score of 21.29. Now the actual second-day score is 18, which is 3.29 less than the predicted score. The SD of prediction here is 2.95. Dividing 3.29 by 2.95, we get 1.11 SD. In terms of probabilities this means that the probability of honesty as thus figured would be 133.5 chances in 1000.

If we took the second score as the independent variable and used the other regression line for prediction, we should find by a similar procedure that the SD score is 3.35, which would give us an honesty probability of something like one in 10,000 — very much less than the probability just reported.

It is evident, however, that as we approach the mean the distance between the regression lines grows less. Discrepancies such as that shown in the foregoing example are greater in the extremes of the scales and less around the means.

It is clear that we must take some compromise between the two regressions. The best compromise is the line which bisects the angle made by the regressions when they cross at the means. Otis has called this the "line of relation" or the "line of correlation" and has used it for transmuting the scores from one test into another. Both Thorndike and Otis have pointed out that this line should not be used for prediction, but that it is the proper one to use for transmutation. This seems to fit the requirements of our case exactly, because it is not prediction of an unknown score that we are after but rather the interpretation of a known difference.

It will be seen at once that the line of relation is precisely what our method of scoring, already described, assumes. It does not, of course, free us from the errors due to the negative correlation between initial score and gain. But these errors need not trouble us except in the interpretation of individual scores. Table IV shows that the mean gain from first day to second day is about the same in grades five, six, seven, and eight for all tests, which simply indicates that when groups are considered the errors tend to cancel each other and the group means remain the same. Neither will they trouble us when it comes to correlating cheating scores with other variables, for we have a formula * for correcting such correlations and freeing them from this type of error. Furthermore, in nearly all subsequent work we shall lump the first three tests (Arithmetic, Completion, and Information) in a single test for measuring cheating of this kind. The three combined have a reliability coefficient of .95, and the $r_{A(B-A)}$ is $-.158$.

2. The Problem of the Fact Score. Our only remaining difficulty is in determining what we have called the "fact score" for individuals on the tests having low reliabilities. In assigning these scores, the probability that a given difference indicates cheating is considerably less in the upper levels of achievement than in the lower levels. But even here only a small number are affected because most of these "c," or fact, scores are considerably greater than 3.0 Xi.

It will be recalled that the opportunity for deception on the Arithmetic, Completion, and Information tests is given in the classroom and on the Word Knowledge test at home. In the treatment of results it is desirable to combine the Xi scores on the three classroom tests into a classroom Xi score, which is the sum or average of the Xi scores of the separate tests. This is accomplished by adding them. The probability value of the resulting total Xi is the product, not the sum, of the probability values of the component Xi's, for when both days or forms A and B are given under honesty conditions the correlations between the difference scores of the three tests are all zero. This is an important consideration in handling individual cases where the probable guilt or innocence of the individual is to be established. Suppose that an individual has a rather large negative Xi score on each of the three classroom tests, but in no case as high as – 3.0 Xi, which is the deadline. What are the chances that such a person was honest throughout? For example, here are the actual Xi scores of a fifth-grade pupil:

---

* The formula for correcting coefficients for this type of error, called type I, is given in Chapter VI.

TEST	SCORE	PROBABILITY OF HONESTY
Arithmetic test	$-1.0\,\sigma$	$\frac{158}{1000}$
Completion test	$-2.0\,\sigma$	$\frac{23}{1000}$
Information test	$-2.5\,\sigma$	$\frac{6}{1000}$

How likely is it that such a *combination* of negative deviates would occur without some factor like deception operating? This may be very readily computed provided we are safe in assuming that the difference scores on the various tests are wholly unrelated to one another. As has been indicated, when we examine the data we find this to be the case. When these conditions obtain, the probability of such a combination of scores occurring is the product of their separate probabilities.* When no answer sheet is available, the probability of getting an Xi score greater than – 1.0 is 158 in 1000; of – 2.0, 23 in 1000; and of – 2.5, 6 in 1000. Multiplying these probabilities, we get 21,804 in 1,000,000,000 or .021804 in 1000. The chances that the above person was honest are about one in fifty thousand. To be sure, this does not tell us on which of the three tests cheating took place. All we know is that there was cheating somewhere.

---

* See any algebra.

Suppose now that we have an individual who shows a set of Xi scores like this:

Arithmetic	− 3.3 Xi
Completion	− 2.6 Xi
Information	− 2.8 Xi

It is evident that he cheated on the Arithmetic test. Did he on either of the others or at least on one of them? The chances that an Xi score of − 2.6 or greater will occur together with one of − 2.8 or greater are very slight — about one in a hundred thousand, even less than the chances of getting a − 3.3 alone, which are about one in two thousand. Hence this individual should be scored as having cheated on the Arithmetic test, and in connection with the others — on which one we do not know — perhaps a little on both.

B. Comparison of Group Scores

So far we have been considering methods of detecting cheating in individual cases. When we deal with groups, the problem is much simpler because in groups, as was noted, these troublesome chance errors tend to cancel each other. The procedure is simple. We first find the mean difference between the scores obtained under honest and dishonest conditions and the standard deviation of the distribution of these differences. We then compare the mean difference score for each test with that shown in Table V. These mean gain figures in Table V are the differences one would expect in a non-cheating performance of an unselected population of grades five to eight. If the opportunity for cheating comes on the firs day and if cheating takes place, the second-day scores will show a loss from the first. Thus all cheating means must be subtracted algebraically from the standard mean gains in Table V. If the resulting figure is more than three times its unreliability,* we may be fairly certain that cheating took place in the group.

---

* The usual method of finding the unreliability of the difference between two means is employed. See Thorndike's *Mental and Social Measurements*, pp. 190–194, Teachers College, Columbia University.

Suppose, for example, that we give the Arithmetic test to a group of 200 children in grades five to eight. Suppose that they show a mean loss on the second day from the first day of three problems. Consulting Table V, we see that in a non-cheating population we expect a gain of 1.06; but instead of this we have here a *loss* of 3, making a *net* difference of 4.06. This difference is over ten times its unreliability and means that we may be practically certain that cheating took place.

STANDARDIZING THE SPEED TEST MATERIAL

In standardizing the Speed test material, the first step was to ascertain what allowance should be made for errors of measurement and practice effects. Two groups in each grade from three to eight, inclusive, were tested, with honesty conditions obtaining throughout; that is, the pupils had no opportunity to score their own papers. Grades three, four, five, and six were in one school, and seven and eight in another. There were roughly forty in each group, giving a total of about 500 cases for this work. Grade three did not take the Addition test or the Number Checking test. These were considered too hard for this grade. Grade four did not take the Number Checking test. With these exceptions all children took all tests. The essential facts are given in Table VII.

In each case the test score is the number right. The numerals 1, 2, and 3 in the column headed " Row " refer to the trial number. There were three trials on each test. Thus the first row across the table is the mean number right for all grades on the first trial of each test. The SD $_{(2-1)}$ is the SD of the second trial minus the first, or the first difference. The SD $_{(3-2)}$ is the SD of the second difference.

It should be kept clearly in mind that the figures in Table VII are clear of cheating as far as we know. They simply represent what is found when all three trials are given under honesty conditions. When these tests were given later as cheating tests and the opportunity for self-scoring came on the last trial, the cheating score was contained in the second difference, or D_2 (row E) of

Table VII. It is with the composition of this difference and its relations with other facts that we are now concerned.

TABLE VII

STANDARDIZATION DATA FOR THE SPEED TESTS

Row	Additions	Number Checking	Cancellation of A's	Digit Symbols	Dots	Cancellation of Digits (4's)
A. Mean 1	43.00	19.55	15.68	38.11		34.31
B. Mean 2	45.77	19.39	16.60	43.50	121.86	36.83
C. Mean 3	48.18	22.70	18.66	51.70	131.10	39.30
Mean Gain						
D. (2–1) or D_1	2.77	− .16	.92	5.39	*	2.52
E. (3–2) or D_2	2.41	3.31	2.06	8.20	9.24	2.47
F. SD 1	12.28	4.87	4.77	10.55	*	9.02
G. SD 2	12.50	5.34	5.33	11.87	27.73	9.83
H. SD 3	14.00	5.83	5.69	12.78	34.33	11.86
I. SD $({}_{2-1})$	4.95	3.56	3.04	6.87	*	4.23
J. SD $({}_{3-2})$	5.40	3.16	3.23	6.12	20.00	5.28
K. r_{12}	.920	.761	.791	.823	*	.900
L. r_{13}	.810	.732	.770	.752	*	.820
M. r_{23}	.923	.845	.820	.879	.814	.890
N. $r_{D_1D_2}$	− .273	− .246	− .316	− .142	*	− .153
O. r_{1D_2}	+ .020	+ .013	+ .001	+ .001	− .001	+ .166
P. r_{2D_2}	+ .07	− .240	− .200	− . 98		+ .137
Q. N	424	370	566	561	529	556

* The time of the first trial on the Dots test was only thirty seconds, hence the score is not comparable with the scores of the two subsequent trials, where the time was one minute.

A. DETERMINING THE FACT SCORE, OR THE LIMITS OF HONEST GAINS, ON THE SPEED TESTS

The differences may be handled, with some slight modifications, in precisely the same way as we handled the IER differences. Consider the mean gain between the second and third trial (row E of Table VII) as the point of reference for each test and measure all deviates from it in terms of their respective SD's (row J of Table VII). In the IER material the opportunity for deception was given on the first trial, so that evidences of it showed in loss on the second trial. In the Speed material the opportunity for deception was given on the third trial, so that evidence of it showed in exceptional gain. Now the mean gains of Table VII, row E, are what we might call normal gains, since they occur when there is no cheating. In order to interpret a gain on any test as an indication of deception, it must exceed this normal gain by three times its SD. In the case of the Addition test the mean normal gain is 2.41 points and the SD of the gain is 5.40. For a difference to have a cheating probability as great as the limits set in the IER material, it should be $2.41 + (3 \times 5.40)$, which is 18.61. Thus if a pupil gains as much as 19 points in the third trial, when he corrected his own paper, over the second, when he did not, he is scored a "c." The limits for the other tests showing where cheating begins are: Number Checking, 13; Digit Symbol, 27; Cancellation of A's, 12; Dots, 70; and Cancellation of Digits, 19.

By making a rather detailed study of the standardization material, we discovered in it certain peculiarities that would enable us to narrow these cheating limits somewhat and thereby identify more cases of deception within the probability limits of 999 in 1000. In the first place, it should be remembered that the gain limits of 19, 13, 27, 12, 70, and 19 respectively are beyond any actually obtained in the standardization data. Those individuals who made the rather large gains in the third trial over the second (D_2) made very small gains or actual losses in the second over the first (D_1).

That is, a large D_2 tends to be accompanied by a smaller D_1, and *vice versa.** The correlations between D_1 and D_2 are given in row N of Table VII. For example, on the Addition test we found that of all those who gained more than 10 points between the first and second trial not one of them gained more than 10 between the second and third; also that of those who gained between 14 and 19 from the second to the third, not one gained anything between the first and second; they all lost instead. This condition of affairs holds true more or less for all tests. Unfortunately we have no measure of it for the Dots test, since the preliminary trial lasted only half a minute to avoid fatigue, whereas all other trials lasted one minute. By inspecting the scattergrams certain " inspectional " limits were set which were used in actual practice. These are as follows:

---

* These negative *r*'s are due to the influence of the chance errors of the measurements. In so far as the second score is lowered by chance error, the first gain is lowered and the second gain is raised.

Arithmetic, allow – 13.	– 14 is cheating. – 10 to – 13 is cheating provided D_1 is – 10 or more.
Number Checking, allow – 12.	– 13 is cheating. – 11 and – 12 are cheating provided D_1 is negative. – 7, – 8, – 9, or – 10 is cheating provided D_1 is – 7 or greater.
Cancellation of A's, allow – 14.	– 15 is cheating. – 11 to – 14 is cheating provided D_1 is – 5 or greater. – 5 to – 10 is cheating provided D_1 is – 10 or greater.
Digit Symbols, allow – 24.	– 25 is cheating. – 20 to – 24 is cheating provided D_1 is – 10 or more.
Dots, allow – 45.	– 46 is cheating.
Cancellation of Digits, allow – 18.	– 10 to – 17 is cheating provided D_1 is – 13 or more.

A more precise determination was later made from the regression of the D_2's on the D_1's, with the results given in Table VIII. The first column is the gain that indicates (999 chances in 1000) that cheating took place provided it is preceded by the gain indicated in the second column.

TABLE VIII

Interpreting D_2 Gains in Relation to D_1 Gains

Additions		Number Checking		Cancellation of A's		Digit Symbols		Cancellation of Digits (4's)	
D_2	D_1	D_2	D_1	D_2	D_1	D_2	D_1	D_2	D_1
19	any	12	any	11	any	27	any	18	5
18	any	11	5	10	5	26	5	17	10
17	5	10	10	8	10	25	15	16	15
16	10	9	15	7	15	24	25	15	20
14	15	8	20	5	20			14	25
13	20							13	30

The facts in this table are derived from the regressions of D_2 on D_1 for each test. The means, SD's, and *r*'s are in Table VII. The regression equations and standard errors of prediction are as follows:

		SD of Prediction
Additions	$D_2 = (-.30\,D_1) + 3.24$	5.18 times 3 = 15.54
Number Checking	$D_2 = (-.22\,D_1) + 3.0$	3.06 times 3 = 9.18
Cancellation of A's	$D_2 = (-.33\,D_1) + 2.37$	3.06 times 3 = 9.18
Digit Symbols	$D_2 = (-.13\,D_1) + 8.88$	6.05 times 3 = 18.15
Cancellation of Digits	$D_2 = (-.19\,D_1) + 2.94$	5.21 times 3 = 15.63

By substituting various values for D_1 in each of the above equations, we find the mean corresponding D_2 value. Adding to this three times the SD of prediction, we get the figures in Table VIII. We have run the values in Table VIII only one way from the mean. We could predict the D_2 values for corresponding losses in D_1. We have not done this because loss occurs rather infrequently as compared with gain.

B. Determining the Speed Xi Scores

We did not assign individual Xi, or amount, cheating scores on the separate Speed tests, but rather added the D_2's of the six tests and assigned a total Speed Xi. The reasons for this procedure are as follows: (1) The rather significant negative correlations between D_1 and D_2 for all the tests (see row N, Table VII) indicate that all D_2's would need to be interpreted in terms of their corresponding D_1's. Exactness would require that the point of reference for each D_2 should be, not the mean of the total distribution of them (row E, Table VII), but the mean of the corresponding array of D_1's; and the unit would not be the SD of the total distribution of honest D_2's (row J, Table VII), but the SD's of the D_1 arrays. (2) Row P of Table VII shows that in two tests there is a slight negative correlation between D_2 and gross score of trial 2. This involves the same difficulty as was discussed in connection with the IER tests. (3) In the IER tests the differences were mostly errors of measurement; here they are partly error and partly gain. This ability to gain or improve one's score from one trial to the next may be correlated with age or intelligence or some other factors.

To get a total D_2 for all six tests from which we derived the Speed Xi, we weighted the D_2 for each test by its SD. Row J of Table VII shows that each of the six SD's will be reduced to about the same size by multiplying Number Checking and Cancellation of A's each by 2 and dividing Dots by 4. The weights used were approximations to facilitate computation and were as follows:

Additions	D_2 times 1
Number Checking	D_2 times 2
Cancellation of A's	D_2 times 2
Digit Symbols	D_2 times 1
Dots	D_2 times $\frac{1}{4}$
Cancellation of Digits	D_2 times 1

The correlation between total D_2 and total D_1 in the non-deceptive data is zero. This is due to the fact that summing has cleared out the chance errors. The correlation between gross total scores of trials 2 and 3 is .97, which also indicates that we are well rid of errors. Further, the correlation between total gross score (trials

1 and 2) and D_2 is zero. This frees us at once from many difficulties.

But D_2 is correlated + .281 with age. This difficulty is overcome by establishing preliminary age norms on the data available and using as points of reference the mean D_2 score for each age group. Fortunately the SD of the total D_2 for each age group is about the same, averaging 17.52 points. The mean total D_2 scores for each age level are as follows:

TABLE IX

AGE NORMS * FOR SPEED Xi SCORES

Years						
17	43	43	44	44	45	45
16	40	40	41	41	42	42
15	38	38	38	39	39	39
14	35	35	36	36	37	37
13	32	32	33	33	34	34
12	29	29	30	30	31	31
11	27	27	27	28	28	28
10	24	24	25	25	26	26
9	21	21	22	22	23	23
8	18	18	19	19	20	20
7	15	15	16	16	17	17
Months	0–1	2–3	4–5	6–7	8–9	10–11

* Smoothed by the regression line.

The unit (the SD) is the same for all ages, namely, 17.52 points, but the point of reference increases about three points for each increase of one year in age.

With these age norms available it was convenient to construct a table by which any Speed total could at once be transmuted into a Speed Xi, provided the age of the pupil or mean age of the group were known. A small portion of such a table, which is arranged like a table of logarithms, is given in Table X.

To find a Speed Xi score, it is necessary only to subtract from the total Speed D_2 the norm for the age of the individual or group as found in Table IX and then find in Table X the entry for the resulting difference. Thus a Speed D_2 of 40 for a child or group 10 years and 2 months old, whose norm is 24, is 40 – 24 or 16. Finding 1 in the left column of Table X and running along to 6, we get .91 as the Xi score.

TABLE X

TOTAL SPEED D_2 Xi TRANSMUTATION TABLE (SAMPLE)*

	0	1	2	3	4	5	6	7	8	9
0	.0	.05	.11	.17	.23	.28	.34	.40	.46	.51
1	.57	.63	.68	.74	.80	.86	.91	.97	1.03	1.08
2	1.14	1.19	1.25	1.31	1.36	1.42	1.48	1.54	1.59	1.65
3	1.71	1.76	1.82	1.88	1.94	1.99	2.05	2.11	2.17	2.22
4	2.28	2.33	2.39	2.45	2.51	2.57	2.62	2.68	2.74	2.79
5	2.85	2.91	2.96	3.02	3.08	3.14	3.19	3.25	3.31	3.36
6	3.42	3.48	3.53	3.59	3.65	3.70	3.76	3.82	3.87	3.93
7	4.00	4.05	4.11	4.16	4.22	4.28	4.33	4.39	4.45	4.51
8	4.57	4.62	4.67	4.74	4.79	4.85	4.91	4.96	5.02	5.08
9	5.13	5.19	5.25	5.30	5.36	5.42	5.48	5.54	5.59	5.65
10	5.70	5.76	5.82	5.87	5.93	6.00	6.04	6.10	6.16	6.22

* When a D_2 gain is greater than zero after the honest mean gain taken from Table IX is subtracted from it, the corresponding Xi score found in Table X is given a minus sign to indicate a greater than even chance of cheating. As usual, – 3.0 Xi represents a cheating probability of about 999 in 1000.

STANDARDIZING THE ATHLETIC CONTESTS

As described in Chapter III, of Book One, the Athletic tests consisted of four athletic events or stunts as follows: a hand dynamometer test, a spirometer test, a pull-up or chinning test, and a standing broad jump. The general procedure was to give the pupil two or more "practice" or preliminary trials in the presence of the examiner, a record of which was made. Following this, the subject made two or more trials alone and unobserved, recording his own scores on a card. Cheating was determined by the difference between the observed or " practice " trials and the unobserved and self-recorded trials.

It will be seen at once that this is the double-testing technique and very much like the Speed tests. We did not standardize this material, as we did the IER and Speed tests, by giving it to a large population under supervised conditions throughout. Another procedure was adopted, which served the purpose fairly well.

The problem was to secure a distribution of differences that were due to factors other than deception. Honest records throughout were needed. Fortunately honest records could readily be spotted by inspection of the cards on which the pupils entered their own scores. On the Hand Dynamometer test there were eight trials, three under supervision and five self-recorded. If none of the self-recorded trials exceeded the highest practice trial, one could be fairly certain that the subject was honest, since each subject knew what he did on the practice or supervised trials and was told to see if he could improve his record. Variations among the self-recorded trials of these honest cases were presumably the result of fatigue or errors in reading the instrument or other sources of variation in ability. A distribution of such fluctuations would indicate how much variation is to be expected from these sources.

For each of the four tests these determinations were made as follows: First, we selected the cases where the records appeared honest throughout. Second, we took the following differences on each test, which yielded the data in Table XI:

TEST	NUMBER OF SELF-RECORDED TRIALS	DIFFERENCE USED IN THESE DETERMINATIONS
Dynamometer	5	Highest of first three minus highest of last two
Spirometer	3	First minus highest of last two
Pull-up	2	First minus second
Broad jump	4	Highest of first two minus highest of last two

TABLE XI

MEANS AND SD'S OF PRESUMABLY HONEST FLUCTUATIONS ON THE PHYSICAL ABILITY TESTS

	DYNAMOMETER (kilograms)	SPIROMETER (cubic inches)	CHINNING (times)	JUMP (inches)	TOTAL WEIGHTED
Mean difference	− 1.50	+ .80	0	+ 1.64	− 1.16
SD difference	2.33	6.70	1.42	2.44	6.12
Maximum difference	− 3.	− 25.	− 3.	− 7.	− 24.00
Population	283	138	275	121	
Weight	2	$\frac{1}{5}$	2	1	

For fact scores, instead of taking three times the SD as the probable limit of honest variation, we took the maximum positive difference. In the case of all but the Spirometer test the fatigue effect skews the distribution away from the positive end of the scale, so that the maximum difference is less than three times the standard deviation.

The means of these distributions might be used as points of reference and the SD's as units in assigning cheating Xi scores. We repeat that this procedure is based on the assumption that these means and SD's are approximately the same as would be obtained between the highest of the three practice trials and the highest of the self-recorded trials under conditions which would not permit deception.

The difference between the highest of the three practice trials and the highest of the self-recorded scores were weighted according to the size of the maximum scores in Table XI and summed into a total difference score for the four tests. The mean and the SD of this distribution were used as the point of reference and the unit for determining a total Xi score for this series. The differences in Table XI are uncorrelated with their respective test abilities and with age. This avoids at once all the difficulties encountered in the Speed tests which arose from the positive correlation of the speed function with age.

CHAPTER III

STANDARDIZATION OF THE PROCEDURE USED WITH THE IER TECHNIQUE

Measurement of mental and social phenomena requires the standardization not only of test materials, but also of procedures. Directions for giving the deception tests are reproduced in the Appendix, and the general procedure is briefly described in Chapters III and IV of Book One. We shall present here the statistical results of the efforts to standardize the IER test situations.

A classroom situation in which a child exhibits deception is composed of certain outstanding features, including the teacher, the examiner, the test material, the opportunity to deceive, and the motive. These features and whatever else may affect the tendency to deceive should be kept constant for all pupils in so far as it is possible to do so. The influence of the teacher could obviously never be kept the same for different groups, but by having the teacher always absent when any group was tested her influence upon her own pupils was kept as nearly constant as possible. The factor of the examiner we could keep constant only in respect to his strangeness to the pupils by having a different examiner for each occasion. The test materials and directions were never altered. The results of our effort to standardize the opportunities and motives will now be reported.

Chapter IV, Book One, describes the four kinds of test materials, the four opportunities, and the four motives with which we worked. The tests were the Arithmetic, Sentence Completion, and Information tests, which were given in school, and the vocabulary or Word Knowledge test, which was taken home. The four opportunities to cheat were:

I. Copying from the key or answer sheet or changing answers to match the key when the key was passed out after the test was finished
II. Copying from the key or answer sheet when it was passed out with the test
III. Copying or getting help from each other
IV. Copying or getting help from the dictionary or some person on the test that was taken home

The four motives were: (1) personal achievement, (2) individual competition, (3) group competition, (4) helpfulness. The formulas or directions that were intended to arouse each of the motives are given in detail in Book One, Chapter IV.

The plan was to rotate the four opportunities among the four tests, keeping the motive constant for each group tested. This we did except for two groups, where we tried to rotate the motive also. Accordingly we made seven different sets of directions to be used with different groups, the directions differing only in the combinations of motives and opportunities attached to the different tests. These batteries were evolved in accordance with the following scheme:

MOTIVE	TEST 1	TEST 2	TEST 3	TEST 4
A. No motive (routine)	Opportunity I	Opportunity II	Opportunity III	Opportunity IV
B. Personal achievement	Opportunity II	Opportunity I	Opportunity III	Opportunity IV
C. Individual competition	Opportunity II	Opportunity III	Opportunity I	Opportunity IV
D. Group competition	Opportunity III	Opportunity I	Opportunity II	Opportunity IV
E. Helpfulness . . .	Opportunity I	Opportunity III	Opportunity II	Opportunity IV
F. Mixed motives .	Opportunity I B	Opportunity II C	Opportunity III D	Opportunity IV E
F. Mixed motives .	Opportunity I C	Opportunity III D	Opportunity II B	Opportunity IV A

In this table the rows are motives, the columns are tests, and the entries, Roman numerals, are opportunities. Test 1 is the Arithmetic test; test 2, Completion; test 3, Information; test 4, Word Knowledge.

The scheme was tried out in population A, where 22 groups of pupils were tested. Table XII gives the entire results by groups tested, motive, opportunity, and test. In Table XII we present, as in most subsequent tables, the number in each group, the mean cheating score, the median cheating score, the SD, and the per cent who cheated on that test or set of tests. Both means and

TABLE XII A

EXPERIMENTAL RESULTS OF IER TESTS, POPULATION A

	ARITHMETIC TEST					COMPLETION TEST				
Grade	N	Mean	Median	SD	% C's	N	Mean	Median	SD	% C's
	Motive A, Opportunity I					Motive A, Opportunity II				
5A	33	−3.48	−2.62	3.32	45	33	−2.00	−1.63	2.26	33
5A	26	−7.05	−7.33	2.87	92	26	−7.59	−7.25	2.75	92
6A	35	−2.26	−1.95	2.00	31	35	−3.69	−3.31	2.16	57
7A	34	−.97	−.50	2.68	18	34	−1.07	−.96	1.35	9
8B	31	−2.69	−2.42	2.23	39	31	−2.11	−1.28	2.24	32
	Motive B, Opportunity II					Motive B, Opportunity I				
6B	28	−8.93	−9.33	2.91	96	28	−4.36	−4.50	2.07	68
8B	38	−2.62	−2.50	2.28	45	38	−1.28	−.92	1.52	13
	Motive C, Opportunity II					Motive C, Opportunity III				
5B	31	−8.80	−8.94	3.97	94	32	−.11	−.14	1.07	1
7B	43	−1.29	−.65	2.33	16	43	+.32	+.48	1.06	0
	Motive D, Opportunity III					Motive D, Opportunity I				
5A	26	−.32	−.17	.94	0	26	−1.39	−1.50	1.31	4
5 and 6	21	+.18	+.44	1.28	0	22	−.30	−.38	1.16	0
7A	42	+.67	+.40	1.21	0	42	−1.07	−.19	1.48	5
8A	41	+.41	+.35	1.08	0	41	−.69	−.65	1.43	7
	Motive E, Opportunity I					Motive E, Opportunity III				
5B	30	−2.64	−1.50	2.85	40	30	+.18	+.40	.93	0
6A	23	−2.74	−1.25	2.95	35	23	+.37	+.19	.82	0
6B	27	−1.95	−.89	2.59	33	27	+.23	+.38	.96	0
7A	29	−1.75	−1.07	2.58	24	29	+.45	+.16	.93	0
8A	38	−2.73	−2.67	2.10	39	38	+.38	+.10	1.04	0
	Motive B, Opportunity I					Motive C, Opportunity II				
6A	29	−2.17	−1.60	2.11	31	29	−.34	−.88	1.25	10
7A	38	−1.61	−1.20	1.69	24	38	−1.15	−1.70	2.21	16
	Motive C, Opportunity I					Motive D, Opportunity III				
5B	35	−2.90	−1.25	2.84	37	35	+.49	+.25	.87	0
6B	36	−.62	+.33	1.59	6	36	+.43	+.25	.90	0

medians are given because the deception distributions are all skewed. The means, medians, and SD's are all in terms of the Xi scores described in the previous chapter.

TABLE XII B

Experimental Results of IER Tests, Population A

	Information Test					Home Test, Word Knowledge				
Grade	N	Mean	Median	SD	% C's	N	Mean	Median	SD	% C's
	Motive A, Opportunity III					Motive A, Opportunity IV				
5A	33	+ .60	+ .67	1.19	0	29	− 4.40	− 4.13	3.65	52
5A	26	+ .63	+ .63	1.07	0	26	− 3.39	− 2.50	2.87	42
6A	35	+ .28	+ .29	1.19	0	34	− 3.20	− 2.50	2.50	38
7A	34	+ .45	+ .70	.93	0	33	− 1.39	− 1.05	1.69	21
8B	31	+ .28	+ .57	1.66	0	26	− 1.49	− 1.00	2.11	23
	Motive B, Opportunity III					Motive B, Opportunity IV				
6B	28	+ .34	+ .31	1.36	0	28	− 4.03	− 4.26	3.10	57
8B	38	− .06	+ .20	.90	0	32	− 1.78	− 1.17	2.66	25
	Motive C, Opportunity I					Motive C, Opportunity IV				
5B	31	− 2.45	− 1.92	2.42	32	30	− 1.83	− 1.33	2.59	33
7B	43	− .99	− .75	1.64	5	40	− 2.09	− 1.38	2.15	30
	Motive D, Opportunity II					Motive D, Opportunity IV				
5A	26	− 3.15	− 3.62	2.01	58	25	− 4.28	− 4.0	3.42	52
5 and 6	22	− 2.23	− 2.83	2.18	45	21	− 4.65	− 3.92	3.84	62
7A	42	− 2.24	− 2.25	2.37	45	26	− 1.62	− 1.50	2.55	19
8A	41	− 1.81	− 1.69	1.70	20	38	− 2.35	− 1.38	2.59	39
	Motive E, Opportunity II					Motive E, Opportunity IV				
5B	30	− 2.98	− 2.25	2.73	43	30	− 2.71	− 1.88	2.61	40
6A	23	− 1.05	− 1.25	1.71	13	23	− 4.60	− 3.88	2.85	61
6B	27	− 1.88	− 1.38	2.19	26	26	− 1.07	− 1.50	2.57	31
7A	29	− 1.96	− 1.81	1.38	17	27	− 1.83	− 1.46	1.49	22
8A	38	− 1.66	− 1.38	1.46	16	29	− 1.27	− .94	2.22	21
	Motive D, Opportunity III					Motive E, Opportunity IV				
6A	29	+ .55	+ .79	1.28	3	18	− 3.04	− 2.0	3.03	33
7A	38	+ .12	+ .30	1.38	0	35	− 1.70	− 1.20	1.76	17
	Motive B, Opportunity II					Motive A, Opportunity IV				
5B	35	− 1.72	− 1.40	2.45	31	35	− 2.50	− 3.13	2.72	31
6B	35	− 1.00	− .34	1.67	11	34	− 2.89	− 1.50	2.94	32

THE EFFECT OF MOTIVES ON CHEATING

Are there any differences among the groups whose scores are reported in Table XII that can be attributed to the different formulas used for motivating the pupils? In the first place, it should be noted that the various motives were fairly well scattered up and down the grade scales. We tried to have one group from each grade in each motive. This enables us at once to keep constant any difference in age, grade, or mental age, at least roughly. But it may be that cheating is a function of differences in tests and differences in opportunity. To compare motives, we must keep the test and opportunity constant, therefore, unless it be found that they make no difference. Table XIII shows the facts of Table XII summarized by motive, opportunity, and test.

TABLE XIII

The Effect of Motives and Opportunities on Cheating

Arithmetic						Completion					
Motive	Opportunity	N	Mean	SD	% C's	Motive	Opportunity	N	Mean	SD	% C's
A	I	159	− 3.10	3.35	43	A	II	159	− 3.10	2.31	43
B	I	67	− 1.86	2.03	27	B	I	66	− 2.24	3.12	36
B	II	66	− 5.29	3.94	67	C	II	67	− .80	2.10	13
C	I	71	− 1.74	2.53	21	C	III	75	+ .13	1.12	0
C	II	76	− 4.55	3.86	49	D	I	130	− .89	1.50	5
D	III	130	+ .31	1.25	0	D	III	71	+ .45	.88	0
E	I	147	− 2.37	2.60	35	E	III	147	+ .32	.96	0
Information						Word Knowledge					
A	III	159	+ .44	1.20	0	A	IV	218	− 2.74	2.90	34
B	II	70	− 1.36	2.22	21	B	IV	60	− 2.83	3.06	40
B	III	66	+ .10	1.10	0	C	IV	70	− 1.98	2.30	31
C	I	74	− 1.00	2.30	16	D	IV	110	− 3.05	3.25	42
D	II	131	− 2.28	2.28	40	E	IV	188	− 2.21	2.55	31
D	III	67	+ .30	1.20	1						
E	II	147	− 1.93	1.90	23						

First, let us remember that A is no motive at all, just routine. Thus we wish to compare each motive with routine A, keeping test and opportunity constant. Taking them in order from Table XIII, we have the following:

	Difference in Means	Difference in Per Cent Cheating
B – A Arithmetic, Opportunity I	+ 1.24 *	– 16
Word Knowledge, Opportunity IV	– .09	+ 6

Thus we have compared motive B, personal achievement, with routine A on two different tests, with opportunity the same in each pair. On the first test there appears to have been more cheating under routine A than under motive B. On the other test there is no significant difference. The difference on the Arithmetic is perhaps due to the fact that five groups took motive A, and only two groups took motive B. If we take from the A the 6A and 7A classes and compare these two alone with the sixth and seventh grades taking B, we find no differences. Thus it is apparent that the formula repeated to enlist activity for the sake of personal achievement made no difference in the amount of cheating over and above a bare routine statement as in A.

It is not worth while to make any comparisons of motives or anything else in those cases where opportunity III was given, because it is quite obvious from Table XII that the pupils did not copy from one another. We shall, however, include opportunity IV even though it is not known whether the motive formula was remembered after the child left the schoolroom. Granted that the formula may have motivated the children when it was given, it is very possible that it was not in operation a few hours later, when they did the test. Comparing C, individual competition, with A in Table XIII, we have:

---

* It should be recalled that cheating is expressed as a *minus* deviation from an expected honest mean, and that when a greater absolute negative number is subtracted from a smaller, the difference is *positive.*

	Difference in Means	Difference in Per Cent Cheating
C−A Arithmetic, Opportunity I	+ 1.36	− 22
Completion, Opportunity II	+ 2.30	− 30
Word Knowledge, Opportunity IV	+ .76	− 3

In every case there appears to have been more cheating under routine A than under individual competition, C. Inspection of Table XII shows that this difference is largely due to grade and school. However, after grade and school are partialed out, we have a slight difference in favor of A. Hence we must conclude that repeating formula C before a test will not produce any more cheating on the average than a bare, routine, colorless statement.

Unfortunately we cannot compare motive A and motive D, group competition, keeping test and opportunity constant, except for test 4. Here the difference between the means of A and D is not significant.

	Difference in Means	Difference in Per Cent Cheating
D−A Word Knowledge, Opportunity IV	− .31	+ 8

Comparing A with E in Table XIII, we get:

	Difference in Means	Difference in Per Cent Cheating
E−A Arithmetic, Opportunity I	+ .73	− 8
Word Knowledge, Opportunity IV	+ .53	− 3

These differences are not large and become actually less when we correct for the fact that A has in it a group of children who cheated more than any other group in the whole system.

We may go farther now and compare these motives with one another, keeping constant test, opportunity, grade, and school in so far as possible.

		Difference in Means	Difference in Per Cent Cheating
B−C	Arithmetic, Opportunity II	− .74	+ 18
	Word Knowledge, Opportunity IV	− .85	+ 9
B−D	Completion, Opportunity I	− 1.35	+ 31
	Word Knowledge, Opportunity IV	+ .22	− 2
B−E	Word Knowledge, Opportunity IV	− .62	+ 9
C−D	Word Knowledge, Opportunity IV	+ 1.07	− 11
C−E	Word Knowledge, Opportunity IV	+ .23	0
D−E	Information, Opportunity II	− .35	+ 17

As a final comparison of motivation, all tests and all opportunities (except opportunity III) are pooled, with the results shown in Table XIV.

TABLE XIV

Relation of Motive Formulas to Deception

Formula	Number of Measures	Mean Amount of Deception	SD
A. Routine, no motive .	535	− 2.95	2.89
B. Personal achievement .	329	− 2.69	3.25
C. Individual competition	356	− 2.17	3.00
D. Group competition . .	372	− 2.02	2.56
E. Helpfulness	482	− 2.17	2.39

The largest difference, B − D,* is − .67, which is three times its SE. It would deny common sense to say that motives make no difference in cheating. We are convinced that they do. The only conclusion we can draw is that repeating formulas such as those we used for the purpose of motivating the child will not make much, if any, difference in the average amount of cheating among groups.

* Cf. footnote on p. 397 of Book One.

THE EFFECT OF OPPORTUNITY ON CHEATING

The next question is whether or not opportunity to cheat makes any difference in the amount of cheating. Presumably it should. In the first place, if there was any cheating at all on opportunity III, it was not sufficient to show up on the group scores. This was copying from one another. There are several reasons why this is true. Children are taught not to copy. Much is said about it. But they are not drilled so much in refraining from using a key when a test is given. Furthermore, copying is more hazardous than using a key. Again, a child will not copy from a neighbor in whom he has no confidence. So we can definitely mark copying off the list as an opportunity in measuring the tendency to deceive under ordinary school conditions. The general results classified by opportunity are shown in Table XV.

TABLE XV

Relation of Opportunity to Deception by Separate Tests

Arithmetic				Completion			
	N	Mean	SD		N	Mean	SD
Opportunity I	444	− 2.45	2.86	Opportunity I	197	− 1.34	2.27
Opportunity II	140	− 4.90	3.92	Opportunity II	226	− 2.42	2.48
Information				Word Knowledge			
Opportunity I	74	− 1.60	2.30	Opportunity IV	645	− 2.56	2.85
Opportunity II	348	− 1.95	2.14				

There are significant differences between opportunities I and II on Arithmetic and Completion,* but the difference in the case of Information is too small to be statistically reliable. It must be said, however, that opportunity II on Arithmetic is heavily loaded with two groups from a school which cheated more than any other.

---

* The Arithmetic difference is 6.84 times its SE. The Completion difference is 4.66 times its SE.

(See Table XII.) But in spite of this there is still a significant difference between opportunities I and II in the case of Arithmetic and Completion. Opportunity I gave the children the key after the test was completed ; opportunity II gave them the key with the test and allowed them to use it while taking the test. The reason it did not make any difference in the case of Information is perhaps the fact that it was very easy to change an answer here. Table XVI gives the combined results for all the opportunities.

TABLE XVI

RELATION OF OPPORTUNITY TO DECEPTION

Opportunity	Number of Measures	Mean Amount of Deception	SD
I. Correcting from answer sheet	715	− 2.06	2.70
II. Copying from answer sheet .	714	− 2.68	2.91
III. Copying from one another .	715	+ .32	1.12
IV. Getting help at home . . .	645	− 2.56	2.85

The differences between these differences are all reliable except the difference between II and IV. The general conclusion is that children do not cheat much by copying from one another, that they cheat more when they have a key or answer sheet given to them at the end of the test, and still more when the key is passed out with the test or when the test is taken home.

THE EFFECT OF TEST MATERIAL ON CHEATING

Our final question concerns the difference between tests in amount of cheating. With opportunity kept constant, the tests stand in this order: Arithmetic, Word Knowledge, Completion, Information. If we combine opportunities I and II and compare the four tests, disregarding all other factors, the order is still Arithmetic, Word Knowledge, Completion, Information. These differences are all reliable except the difference between Completion and Information. The fact that there is more cheating on

Arithmetic and Word Knowledge than on Completion and Information is due partly to the nature of the material and partly to the length of the test. As Completion and Arithmetic have about the same number of elements, the difference here is probably due to the nature of the material. It is easier to cheat on Arithmetic than to cheat by changing or inserting words in a sentence-completion test. The difference in the case of the Information test is due in part to the length of the test, in part to the nature of the material.

As we shall see later, habits of deception are specific. It is quite likely that, since such material as arithmetic problems has been the occasion of deception before, certain habits may be attached to this sort of material which do not carry over to the information type of test or the completion type of test, which are more novel.*

As a result of this experiment with motives and opportunities, we set up a regular routine for giving the IER tests, which is outlined with directions, etc. in Book One, Chapter IV. We abandoned any further attempt to motivate by repeating a formula and attached opportunity I (passing out key after test had been taken) to the Completion and Information tests and opportunity II (passing out key with test) to the Arithmetic tests.

---

* It must be remembered, of course, that these tests are of different lengths and have different reliabilities. It is a curious coincidence that the order of their reliabilities is exactly the same as the order of the amounts of cheating. Before we can be certain that these differences are due to the nature of the test, we should equalize them in length and reliability.

CHAPTER IV

GENERAL STATISTICAL RESULTS OF ALL TECHNIQUES

All our deception tests, except the Athletic Contests and the Party tests of population D,* were given to classroom groups in school. These classroom groups are the units with which we have dealt. Accordingly, we shall report the results of the tests by groups tested, giving in each case (1) the grade, (2) the number of pupils in the group when the test was given, (3) the median Xi cheating score, (4) the mean Xi cheating score, (5) the SD in terms of Xi, (6) the per cent whose Xi scores reached or exceeded − 3.0, that is, the per cent who cheated, and (7) the number who cheated once, twice, thrice, etc. Except in special cases, the results will be given by techniques and not by separate tests.

The techniques will be reported in the following order:

IER school deception tests
IER home deception test
The Speed tests
The Coördination tests
The Performance Puzzle tests
The classroom cheating ratio, or CT
The Athletic Contests
The Party tests
The stealing tests
The lying tests, to win approval (SA)
The lying tests, to escape disapproval

---

* The populations referred to here by letter are described in Chapter IV of Book One.

TABLE XVII

IER School Tests,* Population A

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated		
						0	1	2
5B	31	− 7.85	− 7.38	4.00	94	2	19	10
5B	30	− 2.76	− 3.62	3.55	57	13	8	9
5A	33	− 2.54	− 3.55	3.43	49	17	8	8
5A	26	− 10.00	− 10.00	3.52	96	1	2	23
5A	26	− 2.24	− 2.83	2.17	62	10	16	0
5	35	− 0.76	− 2.43	3.02	57	15	14	6
5 and 6	22	− 1.72	− 1.52	1.57	27	16	5	1
6	38	− 0.23	− 0.50	1.12	11	23	11	4
6B	28	− 10.02	− 8.90	2.88	96	1	9	18
6B	27	− 1.00	− 2.32	2.98	37	17	4	6
6A	35	− 3.96	− 3.72	2.29	66	12	15	8
6A	23	− 1.64	− 2.48	2.74	35	15	5	3
6A	28	− 1.65	− 2.15	2.06	32	19	8	1
7B	43	− 1.10	− 1.38	2.35	21	34	9	0
7A	34	− 0.92	− 1.38	2.55	24	26	7	1
7A	42	− 1.38	− 1.72	2.01	45	23	18	1
7A	29	− 1.61	− 2.41	2.34	41	17	9	3
7A	38	− 1.12	− 1.83	2.48	26	28	5	5
8B	31	− 2.67	− 1.93	3.00	48	16	10	5
8B	38	− 2.24	− 2.63	2.50	47	20	14	4
8A	41	− 1.55	− 1.46	1.82	24	31	9	1
8A	41	− 2.66	− 2.89	2.13	24	31	9	1

* Only two tests are included in this table.

TABLE XVIII

IER School Tests, Population B

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
5A	37	− 1.94	− 2.17	2.60	38	23	11	2	1
5A	41	− 2.29	− 2.80	3.18	44	23	11	6	1
5B	42	− 2.23	− 2.74	2.50	52	20	17	5	0
5B	41	− 3.83	− 3.20	2.68	63	15	16	9	1
6A	42	− 1.42	− 2.11	2.56	38	26	13	2	1
6A	40	− 0.57	− 0.74	1.90	13	35	4	1	0
6B	21	− 3.03	− 2.97	2.43	52	10	5	5	1
6B	39	− 0.51	− 1.14	1.83	23	30	9	0	0
7A	40	− 3.14	− 3.08	3.10	48	21	7	12	0
7A	35	− 1.03	− 1.43	1.47	14	30	5	0	0
7B	35	− 2.51	− 3.08	3.20	49	18	10	7	0
7B	59	− 1.88	− 2.40	3.12	48	31	19	9	0
8A	23	− 2.68	− 2.63	2.18	44	13	8	2	0
8A	29	− 1.65	− 1.65	1.57	28	21	6	1	1
8A	31	− 2.34	− 2.40	2.57	39	19	10	2	0
8B	60	− 1.88	− 2.45	2.32	43	34	20	6	0
8B	27	− 2.80	− 3.14	2.78	52	13	11	2	1
9	28	− 2.28	− 2.61	2.15	39	17	8	2	1
9	53	− 3.18	− 3.13	2.66	59	22	23	6	2
10	119	− 2.81	− 3.07	2.61	46	64	32	16	7

TABLE XIX

IER School Tests, Population C

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
$5A^1$	32	− 10.00	− 9.71	2.62	97	1	5	10	16
$5A^2$	38	− 1.43	− 2.09	2.20	45	21	13	4	0
$5A^3$	33	− 0.34	− 1.15	2.82	21	26	4	2	1
$5B^1$	42	− 6.30	− 6.12	3.62	86	6	11	14	11
$5B^2$	37	− 0.91	− 0.94	1.67	27	27	10	0	0
$6A^1$	26	− 4.57	− 4.34	2.64	73	7	14	4	1
$6A^2$	34	− 1.60	− 2.32	2.78	35	22	8	4	0
$6B^1$	26	− 4.29	− 4.50	2.84	85	4	15	6	1
$6B^2$	34	− 1.72	− 2.18	2.73	44	19	9	5	1
$7A^1$	20	− 4.30	− 4.46	3.44	75	5	10	4	1
$7A^2$	27	− 1.89	− 2.13	2.42	59	11	15	1	0
$7B^1$	25	− 3.66	− 3.18	1.94	68	8	16	1	0
$7B^2$	42	− 2.17	− 2.34	1.82	50	21	20	1	0
$8A^1$	32	− 3.83	− 3.96	2.30	72	9	19	3	1
$8A^2$	35	− 2.63	− 2.33	2.22	51	17	17	1	0
$8B^1$	27	− 5.25	− 4.57	2.38	74	7	13	6	1
$8B^2$	43	− 4.12	− 3.90	1.94	74	11	25	7	0
6B–7A	16	− 5.44	− 4.97	3.60	75	4	4	7	1
Sp. Opp.	49	− 0.68	− .57	1.17	2	48	1	0	0

TABLE XX

IER School Tests, Population K

Grade	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
4	11	− 8.16	− 6.20	3.02	82	2	2	3	4
5	16	− 6.54	− 4.40	2.98	88	2	4	8	2
6	33	− 4.60	− 4.58	2.90	58	14	4	12	3
7	35	− 4.88	− 4.85	2.62	86	5	19	7	4
8	21	− 4.88	− 5.03	2.56	91	2	12	6	1
9	17	− 5.03	− 4.85	2.60	77	4	6	4	3
10	12	− 4.60	− 4.54	2.74	75	3	5	2	2

TABLE XXI

IER School Test (Arithmetic Only), Population L

Grade Group	N	Median	Mean	SD	% C's
5	18	− 1.61	− 1.77	1.83	28
6	16	0.00	− 0.09	1.14	00
7	21	− 2.28	− 2.40	2.22	33

TABLE XXII

IER School Test (Arithmetic Only), Population M

Grade	N	Median	Mean	SD	% C's
5	47	− 3.54	− 3.23	3.80	40
6	56	− 3.00	− 3.98	3.42	68
7	71	− 2.58	− 3.19	2.88	42

TABLE XXIII

IER School Tests, Population P

Group Grade	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
5	21	− 0.95	− 1.74	3.13	24	16	5	0	0
5	23	− 0.35	− 0.29	1.94	4	22	1	0	0
5	26	− 1.05	− 3.28	4.75	27	19	4	3	0
6	27	− 1.22	− 2.03	3.17	15	23	3	1	0
6	26	− 1.72	− 2.24	3.27	23	20	6	0	0
6	25	− 0.67	− 1.23	2.57	12	22	3	0	0
7	43	− 2.47	− 3.11	3.41	23	33	10	0	0
8	42	− 3.38	− 3.45	3.75	43	24	15	3	0

TABLE XXIV

IER School Tests, Population Q

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
5	17	– 1.80	– 2.31	3.51	18	14	3	0	0
5	18	– 1.80	– 1.94	1.30	6	17	1	0	0
6	25	– 1.55	– 2.71	4.25	32	17	7	1	0
6	20	– 0.72	– 1.20	3.46	15	17	2	1	0
7	43	– 0.82	– 1.60	2.62	9	39	3	1	0
8	29	– 0.95	– 1.34	2.55	3	28	1	0	0

TABLE XXV

IER School Tests,* Population R

Arithmetic						Information					
Grade	N	Median	Mean	SD	% C's	Grade	N	Median	Mean	SD	% C's
4	9	– 0.99	– 1.19	1.28	11	4	9	– .18	– .57	1.25	11
5	10	– 1.31	– 1.02	1.06	0	5	16	– .25	– .12	.88	0
6	17	– 1.31	– 1.70	1.54	12	6	17	– .48	– .69	1.02	0
7	23	– 2.11	– 2.11	2.80	26	7	23	– 1.37	– 1.20	1.20	0
8	18	– 1.80	– 2.83	3.17	33	8	18	– .77	– .77	1.02	0
9	18	– 1.80	– 2.26	2.64	39	9	18	– .92	– .99	.85	0
10	18	– 1.90	– 2.44	2.40	33	10	18	– 1.42	– 1.27	1.09	6
11	11	– 2.27	– 2.06	2.39	27	11	11	– .53	– .60	1.29	9
12	19	– 0.57	– 0.46	1.89	5	12	19	– 1.15	– 1.28	.79	0

Word Knowledge

Grade	N	Median	Mean	SD	% C's
4	9	+ .14	– .05	.94	0
5	9	– .27	– .16	.68	0
6	17	– .69	– .99	1.53	12
7	23	– 1.16	– 1.98	2.72	26
8	18	– .69	– 1.05	1.45	11
9	18	– .33	– .82	1.70	11
10	18	+ .22	– .08	1.10	6
11	10	+ .49	– .07	1.35	0
12	17	– .29	– .15	1.15	0

* This population took the Word Knowledge test in school. It is included here as a school test.

TABLE XXVI

IER School Tests, Population S

School	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
S^1	99	− 0.35	− 0.51	1.88	6	93	6	0	0
S^2	27	− 1.49	− 1.12	2.13	4	26	1	0	0
S^3	137	− 1.63	− 1.53	2.07	11	122	14	1	0

TABLE XXVII

IER Home Test Word Knowledge), Population A

Grade Group	N	Median	Mean	SD	% C's
5B	30	− 1.33	− 1.83	2.59	33
5B	30	− 1.88	− 2.71	2.61	40
5B	35	− 3.13	− 2.50	2.72	31
5A	29	− 4.13	− 4.40	3.65	52
5A	26	− 2.50	− 3.39	2.87	42
5A	25	− 4.00	− 4.28	3.42	52
5 and 6	21	− 3.92	− 4.65	3.84	62
6B	28	− 4.26	− 4.03	3.10	57
6B	26	− 1.50	− 1.07	2.57	31
6B	34	− 1.50	− 2.89	2.94	32
6A	34	− 2.50	− 3.20	2.50	38
6A	23	− 3.88	− 4.60	2.85	61
6A	18	− 2.00	− 3.04	3.03	33
7B	40	− 1.38	− 2.09	2.15	30
7A	33	− 1.05	− 1.39	1.69	21
7A	26	− 1.50	− 1.62	2.55	19
7A	27	− 1.46	− 1.83	1.49	22
7A	35	− 1.20	− 1.70	1.76	17
8B	26	− 1.00	− 1.49	2.11	23
8B	32	− 1.17	− 1.78	2.66	25
8A	38	− 1.38	− 2.35	2.59	39
8A	29	− 0.94	− 1.27	2.22	21

TABLE XXVIII

IER HOME TEST (WORD KNOWLEDGE), POPULATION B

GRADE GROUP	N	MEDIAN	MEAN	SD	% C's
5A	38	− 0.67	− 0.95	2.7	13
5A	40	− 3.00	− 3.40	3.1	50
5B	39	− 1.33	− 2.65	2.8	26
5B	39	− 4.00	− 4.45	3.0	66
6A	41	− 3.88	− 3.76	2.7	56
6A	42	− 2.00	− 2.90	3.0	33
6B	23	− 1.56	− 2.36	2.5	30
6B	42	− 1.81	− 2.92	2.8	38
7A	40	− 0.92	− 1.85	2.4	30
7A	36	− 2.70	− 2.66	2.4	42
7B	58	− 1.92	− 2.46	2.8	38
7B	36	− 0.75	− 1.27	2.2	19
8A	22	− 1.60	− 1.32	1.5	14
8A	29	− 1.92	− 2.48	2.2	45
8A	30	− 1.38	− 2.17	2.4	30
8B	61	− 1.62	− 2.36	2.5	39
8B	28	− 4.75	− 4.04	3.4	57
9	28	− 2.50	− 3.09	1.8	43
9	57	− 1.61	− 1.89	2.5	32
10	101	− 1.95	− 2.27	2.6	34

TABLE XXIX

IER Home Test (Word Knowledge), Population C

Grade Group	N	Median	Mean	SD	% C's
$5A^1$	29	− 1.62	− 2.48	2.3	21
$5A^2$	38	− 3.75	− 3.59	3.0	55
$5A^3$	33	− 2.75	− 3.55	3.2	49
$5B^1$	35	− 2.88	− 3.22	3.2	49
$5B^2$	36	− 1.33	− 2.25	2.6	33
$6A^1$	21	− 1.62	− 1.89	2.8	38
$6A^2$	34	− 1.62	− 2.52	2.6	32
$6B^1$	26	− 1.25	− 1.78	2.5	27
$6B^2$	34	− 1.00	− 1.20	2.1	12
$7A^1$	18	− 4.25	− 3.98	3.0	61
$7A^2$	28	− 1.17	− 1.60	2.6	29
$7B^1$	24	− 3.75	− 4.15	3.1	54
$7B^2$	41	− 2.29	− 2.99	2.8	32
$8A^1$	27	− 5.55	− 5.16	2.6	74
$8A^2$	33	− 1.88	− 2.24	1.6	30
$8B^1$	32	− 2.50	− 2.88	2.7	41
$8B^2$	41	− 3.12	− 3.40	2.5	51
H. Opp.	43	− 0.75	− 0.90	1.3	7
L. Opp.	15	− 2.52	− 2.75	2.7	47

TABLE XXX

IER Home Test (Word Knowledge), Population F

Grade Group	N	Median	Mean	SD	% C's
5A	35	− 2.47	− 3.54	2.68	49
5B	40	− 1.41	− 1.94	2.33	15
6A	32	− 1.83	− 2.22	1.75	38
6B	34	− 1.83	− 2.33	2.00	35
$7A^1$	43	− 2.12	− 2.56	1.90	42
$7A^2$	45	− 2.83	− 3.26	2.68	44
$7B^1$	32	− 2.53	− 2.92	2.33	47
$7B^2$	26	− 2.53	− 3.26	2.78	46
$8A^1$	42	− 4.25	− 4.37	1.95	81
$8A^3$	34	− 5.36	− 4.94	2.22	82
$8B^1$	35	− 2.78	− 3.03	1.53	49
$8B^3$	33	− 3.50	− 3.42	2.56	58

TABLE XXXI

IER Home Test (Word Knowledge), Population G

Grade Group	N	Median	Mean	SD	% C's
5A^{1}	34	− 2.52	− 3.47	3.05	47
5A^{2}	19	− 1.53	− 1.61	1.94	26
5B^{1}	20	− 0.09	− 1.06	1.60	15
5B^{3}	31	− 4.00	− 2.96	3.00	55
6A^{1}	22	− 4.30	− 4.34	2.70	64
6A^{2}	21	− 2.98	− 3.20	2.75	52
6B^{1}	34	− 3.06	− 3.33	2.68	50

TABLE XXXII

IER Home Test (Word Knowledge), Population H

Grade Group	N	Median	Mean	SD	% C's
5A^{2}	36	− 1.05	− 1.83	1.88	19
5B^{1+2}	35	− 2.00	− 2.40	2.04	43
6A	43	− 2.33	− 2.46	1.71	37
6B	40	− 1.30	− 2.50	2.75	33

TABLE XXXIII

IER Home Test (Word Knowledge), Population I

Grade Group	N	Median	Mean	SD	% C's
5A	33	− 2.10	− 2.50	3.90	36
5B^{1}	32	− 3.19	− 2.96	3.70	47
6A^{1}	39	− 2.10	− 2.57	3.86	36
6A^{2}	29	− 2.73	− 2.96	3.31	45
6B^{1}	28	− 2.72	− 3.09	3.35	39
7A^{1}	42	− 3.38	− 3.25	2.99	55
7A^{2}	40	− 3.80	− 3.53	3.45	58
7B^{1}	37	− 2.80	− 2.54	3.67	38
7B^{2}	33	− 1.96	− 2.09	4.09	30
8A^{1}	37	− 3.35	− 2.94	1.74	54
8A^{3}	36	− 4.80	− 3.61	2.28	69
8B^{1}	38	− 4.38	− 3.43	1.71	60
8B^{3}	41	− 3.55	− 3.19	1.28	59

TABLE XXXIV

IER Home Test (Word Knowledge), Population J

Grade Group	N	Median	Mean	SD	% C's
5A^1 Boys	37	− 1.03	− 1.87	2.44	27
5A^2 Girls	38	− 2.00	− 2.30	2.33	29
5B^2 B and G	33	− 1.91	− 2.28	2.62	36
5B^2 Boys	36	− 0.06	− 1.31	2.36	25
5B^1 Girls	33	− 2.36	− 2.64	2.60	40
6A^1 Boys	33	− 1.53	− 1.90	1.94	21
6A^3 Girls	31	− 2.31	− 2.92	2.30	32
6A^2 Girls	24	− 2.70	− 2.64	2.30	50
6B^1 Boys	40	− 1.43	− 2.65	2.40	35
6B^2 Girls	38	− 2.25	− 2.62	2.12	37
7A^2 Girls	35	− 4.60	− 4.65	2.52	72
7A^3 Girls	34	− 3.42	− 3.98	2.62	68
7B^1 Girls	34	− 1.00	− 1.52	2.22	21
7B^3 Girls	39	− 1.72	− 2.90	2.11	44
8A^1 Girls	33	− 1.44	− 2.30	2.20	40
8A^2 Girls	36	− 2.06	− 2.47	2.50	31
8B^2 Girls	40	− 3.15	− 3.14	2.00	55
8B^3 Girls	44	− 2.53	− 2.70	1.76	43

TABLE XXXV

IER Home Test (Word Knowledge), Population P

Grade Group	N	Median	Mean	SD	% C's
5	20	− 1.16	− 1.60	1.65	20
5	22	− 0.92	− 1.60	2.64	14
5	26	− 1.55	− 2.15	2.01	23
6	27	− 1.24	− 1.07	1.74	7
6	26	− 2.10	− 2.41	2.08	23
6	25	− 1.07	− 1.07	1.50	8
7	43	− 1.38	− 1.62	1.71	14
8	43	− 1.44	− 1.57	1.46	14

TABLE XXXVI

IER Home Test (Word Knowledge), Population Q

Grade Group	N	Median	Mean	SD	% C's
5	17	− 1.91	− 1.96	1.11	12
5	18	− 0.92	− 1.16	1.71	11
6	25	− 1.28	− 1.61	2.31	12
6	19	− 1.09	− 1.01	1.18	5
7	38	− 1.58	− 1.65	1.52	11
8	27	− 0.71	− 0.53	1.26	0

TABLE XXXVII

IER Home Test (Word Knowledge), Population S

School	N	Median	Mean	SD	% C's
S^1	105	− 0.96	− 0.91	2.8	6
S^2	25	− 1.16	− 1.47	1.5	8
S^3	124	− 1.21	− 1.47	1.5	11

TABLE XXXVIII

SPEED TESTS, POPULATION A

GRADE GROUP	N	MEDIAN	MEAN	SD	%C's	NUMBER WHO CHEATED						
						0	1	2	3	4	5	6
4B	32	− 7.59	− 6.33	1.73	94	2	4	6	10	7	3	0
4A–B	28	+ 0.05	− 0.68	1.00	11	25	3	0	0	0	0	0
4A–B	41	− 0.68	− 0.80	2.26	29	29	7	2	2	1	0	0
4A	36	− 1.71	− 2.17	2.27	39	22	6	5	3	0	0	0
4A	36	− 0.68	− 1.25	1.86	22	28	5	1	0	1	1	0
5B	42	+ 0.05	− 0.05	0.89	7	39	3	0	0	0	0	0
5B	36	− 0.46	− 0.74	0.95	22	28	6	2	0	0	0	0
5B	34	− 3.59	− 3.25	3.08	76	8	5	10	7	4	0	0
5A	26	− 0.57	− 1.54	2.42	31	18	3	2	2	0	1	0
5A	26	− 3.14	− 3.25	2.25	81	5	8	2	6	2	3	0
5A–B	36	− 0.63	− 0.74	1.00	17	30	4	1	1	0	0	0
5 and 6	28	+ 0.68	+ 0.40	1.46	21	22	6	0	0	0	0	0
6B	25	− 0.86	− 0.80	1.15	48	13	10	2	0	0	0	0
6B	25	− 0.63	− 1.14	1.62	20	20	1	2	1	1	0	0
6B	36	− 0.46	− 0.80	1.56	36	23	4	8	1	0	0	0
6A–B	39	+ 0.57	+ 0.40	1.39	10	35	2	1	1	0	0	0
6A	30	− 1.76	− 2.05	2.54	60	12	5	5	3	4	1	0
6A	27	+ 0.63	− 0.34	1.48	11	24	2	0	0	1	0	0
7B	43	− 0.40	− 0.91	2.07	47	23	8	7	2	1	1	1
7B	35	− 0.23	− 0.86	2.24	37	22	4	6	1	2	0	0
7B	32	− 0.74	− 1.42	2.85	50	16	12	2	2	0	0	0
7A	43	+ 0.91	− 0.05	1.80	26	32	7	1	2	1	0	0
7A	43	+ 0.51	+ 0.34	2.06	19	35	4	4	0	0	0	0
7A	41	− 0.63	− 1.14	1.82	34	27	9	1	2	0	1	1
8B	43	− 0.63	− 0.91	2.73	42	25	12	1	2	1	2	0
8B	49	− 0.68	− 0.86	1.44	61	19	22	8	0	0	0	0
8A	35	− 1.65	− 2.05	1.70	74	9	8	8	7	2	1	0
8A	39	− 0.05	− 0.17	1.74	23	30	3	5	1	0	0	0

TABLE XXXIX

Speed Tests, Population C

Grade Group	N	Median	Mean	SD	%C's	Number Who Cheated						
						0	1	2	3	4	5	6
6A^1	29	− 2.17	− 2.62	2.23	59	12	6	4	5	2	0	0
6A^3	38	+ 1.25	+ 0.84	1.35	68	12	9	4	1	5	5	2
6B^1	32	− 3.31	− 3.82	4.02	78	7	6	9	2	3	3	2
7A^1	31	− 1.65	− 2.14	2.20	61	12	8	6	3	1	1	0
7B^1	30	− 1.42	− 1.99	2.40	73	8	10	4	4	3	1	0
8A^1	35	− 1.54	− 2.96	3.74	71	10	8	9	1	4	2	1
8B^1	42	− 3.31	− 4.11	3.04	79	9	5	9	5	5	6	3

TABLE XL

Speed Tests, Population D

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated						
						0	1	2	3	4	5	6
5–6	39	− 3.87	− 4.28	2.94	92	3	2	6	5	14	3	6
6	32	− 4.33	− 4.17	2.48	94	2	3	3	9	6	8	1
6–7	29	− 5.27	− 6.12	3.95	97	1	0	4	6	4	5	9
7–9	33	− 2.03	− 2.63	2.71	85	5	3	6	11	5	3	0
7–8	42	− 3.29	− 4.07	2.96	98	1	2	7	7	10	8	7
7–8	38	− 4.45	− 4.43	3.84	79	8	4	2	4	7	6	7
9–10	31	− 3.57	− 2.07	3.71	100	0	0	11	6	5	8	1

TABLE XLI

Speed Tests, Population E

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated						
						0	1	2	3	4	5	6
First Day												
7A	26	− 1.36	− 1.54	1.03	31	18	7	1	0	0	0	0
7B	30	− 1.76	− 1.99	2.08	63	11	9	2	5	2	1	0
8A	25	− 0.40	− 0.23	1.15	20	20	4	1	0	0	0	0
8B	28	− 0.11	− 0.68	1.68	25	21	2	2	3	0	0	0
9A	23	+ 0.28	+ 0.28	0.85	4	22	1	0	0	0	0	0
9B	26	− 0.40	− 0.63	1.00	12	23	2	0	1	0	0	0
Second Day												
7A	19	− 0.05	− 0.34	1.20	16	16	2	1	0	0	0	0
7B	35	+ 1.36	+ 1.25	0.50	40	21	9	4	1	0	0	0
8A	25	+ 1.48	+ 1.42	0.30	12	22	2	0	0	1	0	0
8B	29	+ 1.71	+ 1.65	0.35	28	21	4	2	1	0	1	0
9A	27	+ 1.76	+ 1.71	0.34	26	20	5	2	0	0	0	0
9B	26	+ 1.59	+ 1.54	0.38	15	22	2	0	2	0	0	0

TABLE XLII

Speed Tests, Population F

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated						
						0	1	2	3	4	5	6
5A	35	− 3.95	− 2.67	1.86	69	11	10	5	6	3	0	0
5B	38	− 3.44	− 3.72	2.26	84	6	11	5	8	6	2	0
6A	29	− 0.76	− 1.10	1.83	28	21	3	2	0	1	2	0
6B	35	− 1.85	− 2.37	2.49	46	19	3	3	3	5	2	0
7A^1	41	− 7.84	− 8.60	3.87	95	2	0	4	9	6	9	11
7A^2	34	− 8.01	− 8.34	4.40	97	1	2	3	4	5	8	11
7B^1	37	− 6.36	− 6.25	3.96	89	4	4	5	5	2	7	10
7B^2	25	− 5.55	− 5.52	2.45	92	2	4	1	6	8	3	1
8A^1	33	− 7.53	− 7.95	3.43	94	2	0	2	3	8	6	12
8A^3	24	− 2.07	− 2.64	2.14	79	5	6	6	2	5	0	0
8B^1	33	− 7.23	− 7.19	2.92	100	0	4	12	5	6	6	0
8B^3	28	− 7.53	− 8.60	4.70	96	1	1	4	3	6	7	6

TABLE XLIII

SPEED TESTS, POPULATION G

GRADE GROUP	N	MEDIAN	MEAN	SD	% C's	NUMBER WHO CHEATED						
						0	1	2	3	4	5	6
5A^1	35	— 4.45	— 5.13	4.14	74	9	4	3	7	4	7	1
5A^2	29	— 2.85	— 3.42	2.89	83	5	8	8	5	2	0	1
5B^1	41	— 2.05	— 2.45	2.28	54	19	9	5	4	2	2	0
5B^3	35	— 2.05	— 2.79	2.06	68	11	12	5	5	1	1	0
6A^1	24	— 4.62	— 5.02	3.46	88	3	4	2	7	4	3	1
6A^2	26	— 1.94	— 2.28	2.09	73	7	8	8	3	0	0	0
6B^1	37	— 12.12	— 11.61	3.68	100	0	0	1	4	7	11	14

TABLE XLIV

SPEED TESTS, POPULATION H

GRADE GROUP	N	MEDIAN	MEAN	SD	% C's	NUMBER WHO CHEATED						
						0	1	2	3	4	5	6
4A	16	— 0.28	— 0.51	1.19	25	12	3	0	1	0	0	0
4B	29	— 0.74	— 0.80	1.48	41	17	7	3	2	0	0	0
5A^2	36	— 1.93	— 1.42	1.46	53	17	9	9	1	0	0	0
5B	35	— 4.65	— 3.59	2.19	74	9	2	3	8	8	3	2
6A	42	— 4.65	— 5.48	1.79	91	4	5	3	4	11	7	8
6B	40	— 6.74	— 5.59	1.98	93	3	5	3	7	8	6	8

TABLE XLV

SPEED TESTS, POPULATION I

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated						
						0	1	2	3	4	5	6
4A^1	33	+ 0.57	+ 0.70	1.32	12	29	4	0	0	0	0	0
4B^1	38	− 3.90	− 3.06	1.87	76	9	6	9	9	4	1	0
5A	25	− 0.39	− 0.80	1.82	32	17	7	0	0	0	0	1
5B	30	− 0.74	− 0.76	1.37	17	25	2	3	0	0	0	0
6A^1	39	− 1.67	− 2.02	1.83	46	21	8	5	0	3	0	2
6A^2	30	− 6.00	− 4.48	2.62	87	4	0	7	5	5	5	4
6B^1	31	− 0.49	− 0.87	1.08	23	24	4	2	0	0	1	0
7A^1	43	− 0.28	− 0.62	1.37	19	35	6	0	1	0	1	0
7A^2	40	− 1.75	− 2.30	3.57	63	15	6	6	6	5	1	1
7B^1	42	− 0.83	− 1.00	1.11	45	23	14	1	4	0	0	0
7B^2	34	− 8.44	− 5.48	2.94	88	4	1	5	4	5	6	9
8A^1	36	− 5.01	− 4.01	3.42	83	6	4	4	8	4	7	3
8A^3	36	− 6.15	− 5.31	2.63	94	2	6	6	4	6	9	3
8B^1	38	− 5.19	− 4.57	2.85	84	6	6	2	7	6	7	4
8B^3	41	− 4.90	− 4.60	2.62	90	4	7	6	3	9	9	3

TABLE XLVI

SPEED TESTS, POPULATION J

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated						
						0	1	2	3	4	5	6
5A^1 Boys	38	− 0.97	− 0.63	2.46	45	21	6	3	6	1	1	0
5B^1 Boys	32	− 1.82	− 1.99	2.43	53	15	8	4	2	2	1	0
5B^2 Girls	34	− 0.51	− 1.42	2.66	35	22	3	4	0	3	2	0
5B^3 B and G	36	− 1.65	− 2.05	2.42	53	17	8	4	3	3	1	0
6A^3 Girls	27	− 0.28	− 2.11	3.85	44	15	5	1	1	4	0	1
6B^1 Boys	43	− 4.91	− 4.91	2.94	91	4	5	4	12	12	3	3
6B^2 Girls	38	− 0.80	− 0.91	1.82	32	26	8	2	1	1	0	0
7A^2	36	− 1.82	− 1.82	1.98	61	14	10	5	3	2	1	1
7A^3	32	− 1.36	− 1.36	2.17	50	16	3	6	5	1	1	0
7B^1	32	− 3.02	− 3.25	2.66	62	12	6	6	1	6	1	0
8A^1	31	− 1.54	− 1.14	1.69	52	15	10	3	0	2	1	0
8A^2	37	− 5.70	− 5.59	3.53	92	3	8	7	7	5	5	2
8B^3	45	− 3.25	− 3.59	2.43	100	0	10	11	4	10	7	3

TABLE XLVII

SPEED TESTS, POPULATION L

GRADE GROUP	N	MEDIAN	MEAN	SD	% C's	NUMBER WHO CHEATED						
						0	1	2	3	4	5	6
4	26	+ 0.17	+ 0.24	0.64	4	25	1	0	0	0	0	0
5	19	− 0.05	− 0.05	0.85	5	18	1	0	0	0	0	0
6	15	− 0.04	+ 0.15	0.76	0	15	0	0	0	0	0	0
7	21	+ 0.25	+ 0.46	1.15	5	20	1	0	0	0	0	0

TABLE XLVIII

SPEED TESTS, POPULATION M

GRADE	N	MEDIAN	MEAN	SD	% C's	NUMBER WHO CHEATED						
						0	1	2	3	4	5	6
4	67	+ 0.46	0.00	1.47	10	60	3	1	3	0	0	0
5	48	− 1.25	− 2.05	3.07	46	26	7	8	2	3	2	0
6	51	0.00	− 0.34	1.68	20	41	5	3	1	1	0	0
7	75	− 0.72	− 0.63	1.65	24	57	10	5	2	1	0	0

TABLE XLIX

SPEED TESTS, POPULATION P

GRADE GROUP	N	MEDIAN	MEAN	SD	% C's	NUMBER WHO CHEATED						
						0	1	2	3	4	5	6
5	21	+ 0.28	+ 0.38	0.97	5	20	1	0	0	0	0	0
5	26	− 0.11	− 0.05	0.99	8	24	2	0	0	0	0	0
6	21	+ 0.80	+ 0.77	0.74	5	20	1	0	0	0	0	0
6	25	− 0.34	− 0.43	1.41	16	21	3	0	1	0	0	0
7	28	− 0.23	− 0.10	1.53	4	27	0	1	0	0	0	0
7	23	− 0.63	− 0.72	1.22	22	18	5	0	0	0	0	0
8	41	− 0.63	− 0.78	1.51	22	32	3	5	1	0	0	0
8	43	− 0.57	− 0.34	1.39	33	29	12	2	0	0	0	0

TABLE L

Speed Tests, Population R

Grade	N	Median	Mean	SD	% C's	Number Who Cheated						
						0	1	2	3	4	5	6
4	9	+ 0.19	− 0.03	0.60	0	9	0	0	0	0	0	0
5	14	+ 0.45	+ 0.34	0.42	0	14	0	0	0	0	0	0
6	15	+ 0.23	− 0.15	1.32	13	13	1	1	0	0	0	0
7	24	− 0.51	− 1.25	2.24	33	16	6	0	0	0	2	0
8	21	− 0.86	− 1.14	1.68	38	13	5	1	2	0	0	0
9	17	− 1.36	− 1.48	2.75	47	9	4	1	2	0	1	0
10	28	− 0.71	− 0.97	2.03	39	17	4	1	1	4	1	0
11	13	+ 0.97	+ 0.09	2.32	15	11	1	0	0	1	0	0
12	23	+ 0.40	+ 0.19	2.01	22	18	3	1	0	0	1	0

TABLE LI

Speed Tests, Population U

First Day

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated						
						0	1	2	3	4	5	6
3A	34	− 4.39	− 5.42	2.9	94	2	16	7	5	4	0	0
3B	39	− 3.59	− 4.11	3.7	56	17	7	8	5	2	0	0
4A	41	− 4.22	− 4.22	3.0	76	10	11	11	4	3	2	0
4B	38	− 7.64	− 6.62	3.8	82	7	5	8	7	9	2	0
5A	38	− 6.33	− 6.44	3.7	90	4	6	4	3	7	11	3
5B	36	− 2.11	− 2.51	2.1	56	16	12	2	2	2	2	0
6A	37	+ 0.17	+ 0.11	0.9	8	34	3	0	0	0	0	0
6B	45	− 0.23	− 0.80	1.7	40	27	11	4	2	1	0	0

Second Day

Grade Group	N	Median	Mean	SD	% C's	0	1	2	3	4	5	6
3A	33	− 7.36	− 7.42	3.8	100	0	7	11	11	4	0	0
3B	36	− 0.80	− 2.05	3.3	39	22	7	2	5	0	0	0
4A	40	− 7.93	− 7.36	4.5	93	3	9	5	5	8	10	0
4B	36	−10.53	−10.24	4.2	97	1	2	2	8	11	12	0
5A	38	− 3.19	− 3.19	2.6	68	12	8	5	5	8	0	0
5B	37	− 1.19	− 1.59	1.9	49	19	11	2	3	1	1	0
6A	41	− 0.51	− 0.63	1.6	24	31	8	0	1	1	0	0
6B	44	− 1.14	− 1.19	1.8	34	29	9	4	0	1	1	0

TABLE LII

Coördination Tests, Population E

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
7A	32	− 2.67	− 2.95	2.26	44	18	6	3	5
7A^{1}	29	− 0.95	− 1.83	2.43	31	20	3	4	2
7A^{2}	25	− 2.75	− 2.88	2.47	48	13	2	6	4
7A^{3}	29	− 4.08	− 3.96	2.66	66	10	6	6	7
7A^{4}	34	− 4.83	− 4.22	2.48	76	8	5	11	10
7A^{5}	31	− 6.05	− 4.64	3.07	74	8	1	11	11
7A^{6}	33	− 5.12	− 4.22	2.54	79	7	7	10	9
7B	34	− 3.48	− 3.12	2.32	59	14	8	7	5
7B^{2}	32	− 6.62	− 5.69	2.33	91	3	5	6	18
7B^{3}	32	− 6.83	− 6.54	2.26	91	3	1	7	21
7B^{4}	27	− 7.81	− 7.22	1.96	100	0	2	5	20
7B^{5}	20	− 6.75	− 6.57	2.61	90	2	2	3	13
7B^{6}	26	− 8.98	− 7.83	2.42	100	0	4	4	18
7B^{7}	26	− 7.98	− 6.93	2.40	92	2	1	7	16
8G	33	− 2.25	− 1.98	2.39	39	20	3	9	1
8G^{2}	34	− 6.06	− 5.76	2.15	94	2	6	7	19
8G^{3}	29	− 5.85	− 5.44	2.38	76	7	3	6	13
8G^{4}	33	− 4.95	− 4.46	2.22	85	5	4	18	6
8G^{5}	31	− 7.53	− 6.79	1.81	94	2	1	7	21
8G^{6}	26	− 4.48	− 3.93	3.64	73	7	3	11	5
8G^{7}	34	− 4.83	− 4.46	1.95	88	4	7	16	7
9^{1}	34	− 4.48	− 3.99	1.80	62	13	4	6	11
9^{2}	32	− 3.40	− 3.39	1.70	63	12	7	10	3
9^{3}	31	− 3.62	− 3.32	2.44	58	13	6	5	7
9^{4}	32	− 1.67	− 1.87	2.07	38	20	7	4	1
9^{5}	32	− 1.75	− 2.02	2.02	44	18	9	3	2
9^{6}	21	− 5.58	− 4.67	2.00	81	4	3	5	9
9^{7}	21	− 3.58	− 2.90	1.74	52	10	6	4	1
9^{8}	25	− 5.08	− 4.55	2.20	76	6	3	7	9

TABLE LIII

Coördination Tests, Population F

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
4A	34	– 9.5	– 9.0	1.03	100	0	0	4	30
4B	39	– 7.9	– 7.7	1.72	100	0	0	14	25
5A	37	– 9.0	– 7.6	3.20	89	4	1	4	28
5B	42	– 9.2	– 8.7	1.95	100	0	0	3	39
6A^{1}	33	– 6.0	– 6.1	3.21	85	5	2	6	20
6B	33	– 5.3	– 5.2	2.24	91	3	4	17	9
7A^{1}	40	– 9.0	– 8.5	1.58	100	0	0	3	37
7A^{2}	43	– 9.4	– 9.1	1.18	100	0	0	2	41
7B^{1}	41	– 7.3	– 7.0	1.62	98	1	1	7	32
7B^{2}	29	– 8.5	– 7.7	2.36	97	1	1	3	24
8A^{1}	41	– 8.9	– 8.5	1.45	100	0	1	1	39
8A^{3}	35	– 8.3	– 8.2	1.05	100	0	0	3	32
8B^{1}	34	– 4.8	– 4.9	2.32	85	5	2	23	4
8B^{3}	34	– 7.3	– 6.8	2.49	91	3	1	6	24

TABLE LIV

Coördination Tests, Population G

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
4A^{1}	43	– 8.6	– 8.0	1.98	98	1	2	5	35
4B^{1}	39	– 7.4	– 7.4	1.64	92	3	0	11	25
4B^{2}	36	– 7.0	– 6.6	2.04	94	2	2	14	18
5A^{1}	36	– 4.9	– 4.7	2.00	89	4	3	25	4
5A^{2}	30	– 8.1	– 7.5	1.50	100	0	0	7	23
5B^{1}	41	– 4.9	– 4.5	2.36	83	7	5	14	15
5B^{3}	36	– 6.3	– 6.4	1.33	97	1	3	13	19
6A^{1}	29	– 7.5	– 6.9	2.98	97	1	2	7	19
6A^{2}	28	– 7.8	– 7.7	1.28	96	1	0	5	22
6B^{1}	38	– 6.5	– 6.1	1.69	95	2	1	14	21

TABLE LV

Coördination Tests, Population H

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
4A^1	31	− 6.0	− 5.7	2.14	97	1	5	14	11
4B^2	26	− 7.3	− 7.6	2.09	100	0	4	5	17
5A^2	37	− 8.9	− 8.0	1.97	97	1	1	6	29
5B^3	39	− 8.6	− 7.6	2.15	98	1	2	8	28
6A	44	− 7.4	− 7.1	2.29	98	1	5	6	32
6B	35	− 7.7	− 7.5	1.82	100	0	2	7	26

TABLE LVI

Coördination Tests, Population I

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
4A^1	36	− 8.1	− 7.2	2.84	89	4	2	0	30
4B^1	45	− 9.3	− 8.2	2.09	98	1	0	9	35
5A	31	− 7.3	− 7.2	1.53	100	0	1	5	25
5B^1	32	− 6.7	− 6.6	2.49	91	3	2	7	20
6A^1	42	− 6.7	− 6.4	2.68	88	5	1	15	21
6A^2	24	− 5.0	− 4.6	2.45	79	5	2	12	5
6B^1	33	− 6.9	− 6.6	2.24	91	3	2	7	21
7A^1	43	− 7.2	− 6.5	2.26	86	6	2	4	31
7A^2	38	− 6.8	− 6.1	2.23	90	4	3	11	20
7B^1	42	− 4.6	− 4.3	2.34	76	10	6	16	10
7B^2	36	− 6.7	− 6.4	2.26	95	2	3	7	24
8A^1	37	− 8.3	− 8.1	1.45	100	0	2	6	29
8A^3	40	− 9.3	− 9.0	0.95	100	0	0	2	38
8B^1	37	− 9.3	− 8.8	1.22	100	0	0	2	35
8B^3	41	− 8.7	− 8.2	1.44	100	0	3	0	38

TABLE LVII

Coördination Tests, Population J

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
$4A^3$	36	– 9.5	– 9.0	1.03	89	4	7	10	15
$4B^3$	35	– 7.0	– 5.5	2.78	86	5	6	24	0
$5A^1$	31	– 5.8	– 5.6	2.13	97	1	4	13	13
$5A^2$	35	– 7.8	– 6.9	2.83	94	2	4	5	24
$5B^1$	41	– 4.6	– 4.4	1.76	78	9	17	15	0
$5B^2$	34	– 6.9	– 6.3	2.60	85	5	3	4	22
$5B^3$	33	– 5.9	– 5.7	2.38	91	3	0	14	16
$6A^1$	34	– 6.7	– 6.5	1.97	97	1	2	10	21
$6A^2$	31	– 2.8	– 2.9	2.67	68	10	8	12	1
$6A^3$	25	– 6.7	– 6.1	3.50	88	3	1	6	15
$6B^2$	39	– 5.1	– 4.8	2.42	87	5	7	15	12
$6B^1$	43	– 7.0	– 6.4	2.32	93	3	2	10	28
$7A^2$	36	– 6.1	– 5.3	2.50	83	6	6	8	16
$7A^3$	36	– 6.1	– 5.6	2.63	86	5	5	9	17
$7B^1$	31	– 5.8	– 5.6	2.11	90	3	2	12	14
$7B^3$	39	– 5.6	– 5.1	2.26	85	6	4	15	14
$8A^1$	32	– 5.4	– 5.5	2.47	78	7	2	10	13
$8A^2$	38	– 6.1	– 5.6	1.92	87	5	3	19	11
$8B^2$	40	– 7.6	– 7.6	1.43	98	1	0	8	31
$8B^3$	45	– 6.0	– 5.7	2.03	91	4	4	17	20

TABLE LVIII

Coördination Tests, Population L

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
4	26	– 6.75	– 5.98	3.24	81	5	3	5	13
5	19	– 4.92	– 4.71	2.02	84	3	3	10	3
6	18	– 2.00	– 2.55	2.88	50	9	2	5	2
7	21	– 3.75	– 3.75	2.70	57	9	2	3	7

TABLE LIX

Coördination Tests, Population M

Grade	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
4	68	− 6.68	− 5.52	3.28	75	17	3	13	35
5	48	− 4.83	− 4.62	2.74	77	11	11	11	15
6	57	− 5.50	− 5.46	3.33	75	14	7	7	29
7	75	− 6.00	− 5.46	2.82	77	17	4	15	39

TABLE LX

Performance Puzzles, Population D

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
5–6	40	− 0.15	− 0.62	1.75	48	21	11	5	3
6	30	− 0.83	− 1.36	1.83	77	7	10	9	4
6–7	32	− 0.98	− 0.95	1.47	81	6	12	12	2
7–8	42	− 1.45	− 1.64	1.34	74	11	14	15	2
7–8	37	− 0.85	− 1.58	1.51	73	10	13	7	7

TABLE LXI

Performance Puzzles, Population R

Grade	N	Median	Mean	SD	% C's	Number Who Cheated			
						0	1	2	3
4	9	− 0.68	− 0.01	1.28	56	4	4	1	0
5	14	+ 0.34	+ 0.08	1.03	36	9	3	1	1
6	15	+ 0.45	+ 0.003	1.55	33	10	2	2	1
7	25	− 0.86	− 1.97	1.52	52	12	5	7	1
8	22	− 0.46	− 0.97	1.29	45	12	7	2	1
9	16	− 0.03	− 0.17	1.46	44	9	5	1	1
10	26	− 0.88	− 1.91	1.88	38	16	5	3	2
11	13	− 0.65	− 1.36	1.28	31	9	2	2	0
12	20	+ 0.03	− 0.95	1.55	25	15	3	0	2

TABLE LXII

CT RATIO, POPULATION C

GRADE GROUP	N	MEDIAN	MEAN	SD
$6A^1$	39	.450	.386	.237
$6A^3$	44	.217	.309	.293
$6B^1$	34	.390	.429	.226
$7A^1$	42	.240	.240	.163
$7B^1$	33	.375	.360	.229
$8A^1$	40	.310	.340	.251
$8B^1$	41	.340	.310	.213

TABLE LXIII

CT RATIO, POPULATION D

GRADE	N	MEDIAN	MEAN	SD
5A	11	.487	.488	.222
5B	10	.600	.555	.155
6A	24	.575	.525	.221
6B	30	.516	.526	.149
7A	38	.583	.589	.177
7B	26	.350	.406	.179
8A	34	.500	.513	.204
8B	27	.525	.529	.190
9A	34	.438	.440	.179
9B	14	.575	.446	.159
10A	9	.545	.525	.149
10B	7	.425	.361	.196

TABLE LXIV

CT RATIO, POPULATION F

GRADE GROUP	N	MEDIAN	MEAN	SD
4A^1	36	.384	.442	.167
4B^1	39	.638	.652	.226
5A	37	.506	.471	.218
5B	42	.525	.542	.158
6A	33	.334	.351	.224
6B	34	.314	.372	.213
7A^1	42	.807	.769	.175
7A^2	43	.833	.785	.183
7B^1	41	.742	.691	.281
7B^2	29	.709	.639	.219
8A^1	41	.903	.841	.179
8A^3	35	.522	.561	.174
8B^1	35	.607	.555	.177
8B^3	34	.806	.740	.204

TABLE LXV

CT RATIO, POPULATION G

GRADE GROUP	N	MEDIAN	MEAN	SD
4A^1	44	.520	.523	.222
4B^1	39	.508	.480	.208
4B^2	36	.392	.464	.176
5A^1	39	.544	.508	.224
5A^2	30	.510	.517	.167
5B^1	41	.333	.343	.199
5B^3	36	.425	.435	.163
6A^1	30	.620	.583	.211
6A^2	29	.447	.475	.147
6B^1	38	.825	.808	.160

TABLE LXVI

CT Ratio, Population H

Grade Group	N	Median	Mean	SD
4A^1	36	.374	.336	.139
4B^2	29	.378	.400	.174
5A^2	38	.413	.404	.143
5B^3	38	.625	.595	.216
6A	47	.756	.688	.228
6B	44	.740	.686	.229

TABLE LXVII

CT Ratio, Population I

Grade Group	N	Median	Mean	SD
4A^1	31	.298	.348	.152
4B^1	45	.603	.578	.193
5A	34	.405	.446	.215
5B^1	32	.339	.338	.132
6A^1	42	.409	.423	.243
6A^2	33	.538	.583	.272
6B^1	33	.342	.351	.171
7A^1	43	.344	.355	.154
7A^2	40	.445	.470	.198
7B^1	42	.275	.289	.167
7B^2	37	.731	.678	.244
8A	37	.634	.648	.241
8A^3	39	.731	.706	.197
8B^1	37	.718	.689	.224
8B^3	41	.646	.664	.211

TABLE LXVIII

CT Ratio, Population J

Grade Group	N	Median	Mean	SD
4A^3	43	.318	.314	.188
4B^3	36	.269	.279	.191
5A^1	38	.333	.380	.166
5A^2	40	.431	.454	.164
5B^1	41	.228	.274	.198
5B^2	34	.335	.378	.219
5B^3	33	.416	.415	.199
6A^1	35	.334	.339	.960
6A^2	31	.253	.223	.166
6A^3	28	.408	.407	.254
6B^1	43	.644	.608	.209
6B^2	39	.248	.284	.166
7A^2	37	.421	.418	.199
7A^3	36	.420	.418	.213
7B^1	33	.347	.425	.229
7B^3	39	.505	.515	.246
8A^1	33	.334	.346	.220
8A^2	38	.600	.512	.223
8B^2	40	.595	.591	.133
8B^3	45	.605	.587	.202

TABLE LXIX

CT Ratio, Population L

Grade Group	N	Median	Mean	SD
4	26	.307	.279	.129
5	19	.264	.236	.112
6	19	.125	.130	.110
7	21	.225	.182	.153

TABLE LXX

CT RATIO, POPULATION M

GRADE	N	MEDIAN	MEAN	SD
4	68	.313	.284	.184
5	47	.321	.336	.234
6	56	.333	.293	.191
7	72	.377	.315	.195

TABLE LXXI

ATHLETIC CONTEST, POPULATION A

GRADE	N	MEDIAN	MEAN	SD	% C's	NUMBER WHO CHEATED			
						0	1	2	3
7	52	− 1.33	− 1.75	2.16	44	29	19	2	2
8	71	− 1.41	− 1.81	2.17	39	43	21	4	3

TABLE LXXII

ATHLETIC CONTEST, POPULATION C

GRADE GROUP	N	MEDIAN	MEAN	SD	% C's	NUMBER WHO CHEATED			
						0	1	2	3
6A^1	28	− 1.49	− 2.10	2.84	61	11	11	3	3
6A^3	20	− 1.33	− 1.16	1.73	40	12	6	2	0
6B^1	35	− 1.17	− 1.59	1.55	43	20	7	7	1
7A^1	36	− 1.49	− 0.83	1.47	31	25	8	2	1
7B^1	34	− 0.66	− 1.03	1.99	38	21	9	2	2
8A^1	29	− 1.44	− 1.64	1.79	52	14	12	3	0
8B^1	35	− 0.61	− 0.96	1.59	37	22	11	2	0

TABLE LXXIII

Athletic Contest, Population D

Grade Group	N	Median	Mean	SD	% C's	Number Who Cheated				
						0	1	2	3	4
5	14	− 3.27	− 3.50	2.80	57	6	2	2	4	0
5–6	41	− 1.31	− 1.63	2.65	46	22	12	5	1	1
6	30	− 1.96	− 2.28	2.54	63	11	9	5	5	0
6–7	30	− 1.63	− 2.03	2.35	60	12	9	8	0	1
7–9	36	− 2.13	− 2.22	1.88	58	15	12	7	1	1
7–8	37	− 1.81	− 2.20	2.73	62	14	16	4	3	0
7–8	36	− 1.70	− 1.58	2.09	61	14	14	7	1	0
9–10	25	− 1.96	− 2.13	2.23	60	10	10	3	1	1

TABLE LXXIV

Party C's, Population C

Grade Group	N	Number Who Cheated				% C's
		0	1	2	3	
6A[1]	29	13	10	6	0	55
6A[3]	32	12	11	7	2	63
6B[1]	30	14	13	3	0	53
7A[1]	30	11	11	7	1	63
7B[1]	29	19	5	4	1	35
8A[1]	32	19	12	1	0	41
8B[1]	32	23	8	1	0	28

TABLE LXXV

PARTY C'S, POPULATION D

COTTAGE GROUP	N	NUMBER WHO CHEATED				% C's
		0	1	2	3	
4	25	7	13	4	1	72
5	18	8	7	3	0	56
7	22	11	8	3	0	50
8	20	9	10	1	0	55
9	22	15	6	1	0	32
11	20	11	7	2	0	45
12	19	10	6	3	0	47
16	25	13	12	0	0	48
17	17	11	5	1	0	35
19	22	13	8	1	0	41

TABLE LXXVI

MONEY STEALING TESTS

POPULATION C			POPULATION D			POPULATION R		
Grade Group	N	% S's	Grade Group	N	% S's	Grade Grade	N	% S's
6A^1	33	9	5	36	8	4	11	45
6A^3	39	3	6	31	10	5	15	13
7A^1	31	23	7	24	21	6	15	13
8A^1	22	0	8	17	18	7	26	54
8B^1	32	6	9	16	13	8	23	9
			10	3	0	9	17	18
						10	32	22
						11	13	23
						12	24	0

TABLE LXXVII

SA Lying Test, Population A

Grade Group	N	Median	Mean	SD	% L's
5	36	– 2.62	– 2.44	1.04	31
5A	31	– 2.82	– 2.62	0.98	32
5B	31	– 2.49	– 1.71	1.51	12
5B	28	– 1.49	– 1.45	1.28	0
5A and B	32	– 2.39	– 2.07	1.32	6
5A	29	– 2.08	– 2.20	1.12	3
5–6	30	– 2.54	– 2.31	1.30	3
6A	28	– 1.75	– 1.91	1.24	21
6A	38	– 2.39	– 2.20	1.17	24
6B	22	– 2.82	– 2.52	1.17	32
6B	27	– 3.06	– 2.69	1.19	53
6B	28	– 2.94	– 2.77	1.44	18
6A	25	– 2.94	– 2.84	1.39	20
7B	33	– 1.40	– 1.44	1.49	15
7A	37	– 2.55	– 2.39	1.29	38
7B	36	– 2.33	– 2.27	1.23	36
7B	37	– 2.66	– 2.51	0.98	19
7A	42	– 2.58	– 2.64	1.30	10
8A	41	– 1.65	– 1.50	1.10	7
8B	42	– 1.45	– 1.45	1.14	0
8A	38	– 1.99	– 1.80	1.14	11
8B	49	– 2.46	– 2.28	1.06	24

TABLE LXXVIII

SA Lying Test, Population C

Grade Group	N	Median	Mean	SD	% L's
6	30	– 1.97	– 1.85	1.04	10
6	38	– 2.70	– 2.30	1.13	42
6	30	– 2.70	– 2.37	1.22	27
7	30	– 1.81	– 1.57	1.49	23
7	29	– 1.92	– 1.89	1.13	28
8	33	– 2.29	– 2.34	1.03	24
8	39	– 2.04	– 1.77	1.16	21

TABLE LXXIX

SA LYING TEST, POPULATION D

GRADE GROUP	N	MEDIAN	MEAN	SD	% L's
5–6	38	− 1.65	− 1.63	1.36	29
6	34	− 1.26	− 1.32	1.33	21
6–7	28	− 3.15	− 2.63	1.67	64
7–9	32	− 1.60	− 1.42	1.29	16
7–8	27	− 1.32	− 1.14	0.92	11
9–10	24	− 1.94	− 1.82	0.96	25

TABLE LXXX

SA LYING TEST, POPULATION P

GRADE GROUP	N	MEDIAN	MEAN	SD	% L's
5	23	− 2.86	− 2.62	1.04	35
5	21	− 0.68	− 0.67	0.95	0
5	27	− 1.65	− 1.38	1.52	22
6	28	− 1.51	− 1.41	1.12	11
6	26	− 1.49	− 1.42	0.97	4
6	27	− 1.52	− 1.69	1.09	11
7	42	− 1.45	− 1.43	1.10	7
8	38	− 1.26	− 1.31	0.83	3

TABLE LXXXI

LIE INDEX,* POPULATION A

GRADE GROUP	N	% −	% 0	% +
5B	23	9	4	87
5B	14	14	7	79
5A	22	18		82
5A	12	17		83
5A	14			100
5	15			100
5A and 6A	6	33	17	50
6B	25	20		80
6B	8			100
6A	20	35		65
6A	7	14		86
6A	3			100
6A	7			100
7B	9	11		89
7A	8	50		50
7A	17	24		77
7A	6	17		84
7A	8	25	13	63
8B	14	14		86
8B	15	13		87
8A	16			100
8A	8	25		75

* The lie index is described in Chapter III of Book One. It is figured only for those having a "fact," or cheating, score. The columns headed −, 0, and + give the percentages showing a preponderance of truths, a balance of lies and truths, and a preponderance of lying respectively.

TABLE LXXXII

Lie Index,* Population B

Grade Group	N	% −	% 0	% +
5A	13	16		85
5A	16			100
5B	18	11	6	83
5B	16	6	13	81
6A	15	7		93
6A	2			100
6B	8	25		75
6B	8			100
7A	16	6		94
7A	5			100
7B	16	6		94
7B	22	18		82
8	18	6		95
8	15	27	20	53
8	9	11	11	78
8	7	15		86
8	8	13		88
9	9	33	11	56
9	21	5	10	86

* See note for Table LXXXI.

CHAPTER V

RELIABILITIES OF THE TESTS

The reliability of a character test is somewhat more difficult to determine than that of an intelligence or educational test. The usual procedure of self-correlation (*i.e.*, one form of the test against a similar form) or split-form correlation (*i.e.*, one half against the other half of a single form) will not entirely suffice. The difficulties involved were discussed in general in Book One, Chapter V. Some of these are more or less inherent in all character tests, and some are peculiar to the techniques used by us for measuring deception.

The best statistical approach to the problem is from the point of view of *unreliability*, or errors, rather than from the point of view of *reliability*, or precision. Statistically an error is a deviation from a " true measure," which is usually taken to be the mean or some central tendency of a very large number of measures, or of applications of the instrument, or of readings of the instrument. Thus a *true measure* of the honesty of John Doe in situation S would be a very large number of observations or records or *test scores* of his behavior in that situation or similar situations. In Book One we mention the fact that such *test scores* remain relatively fixed from day to day in the case of intelligence, that they change only gradually in the case of educational subjects, but that in character or conduct they may change radically overnight or in a very short time. The *true score*, however, probably remains as fixed from day to day in conduct as in intellect or anything else when other things are equal or unchanged. For example, a child's honesty on a single test in arithmetic may fluctuate much more than his ability to do the problems, largely because his conduct is one response to one situation whereas his arithmetical ability is a large number of responses to a large number of situations (problems). The IER Arithmetic tests used by us contain 55 problems. The ability to do one problem (especially in the effective range of difficulty) may fluctuate as much as the tendency to do the same problem honestly. If honesty were measured by 55 responses to 55 classroom situations, the mean score would probably not fluctuate from day to day any more than the mean score in any test containing 55 items. If the tendency to deceive in classroom situations is defined as the mean or central tendency of a very large number of records or observations, we must assume that this *true score* will remain relatively the same from day to day, if the statistical concepts of reliability are to apply.

Having therefore a fixed theoretical point of reference for character tests as we have for intelligence tests, we may proceed to consider the size and the nature of the deviations of single test scores from it and the causes thereof. The score obtained by an individual on any kind of test will probably deviate from the true score by an amount determined by the conditions under which the test was taken, the attitude of the pupil toward the test, the test situation, and other factors. Such a deviation is regarded as an error of measurement. Some notion of its size is gained by giving the test twice and correlating the two sets of obtained scores. This is the well-known coefficient of reliability and is a measure of the precision of measurement. Thus the higher the coefficient of reliability, the smaller the errors of measurement or the greater the precision of measurement.

We have been assuming that the two forms of the test are *similar*, but not identical. Identical forms are avoided in the case of intelligence tests partly to escape the influence of memory and partly to escape the correlation between errors. If the two forms are identical, then the factors that cause deviation from the true score on one form may operate to cause like deviations on the other form, and the errors will thus be correlated. This would tend to give coefficients of reliability that are too high. On the other hand, if the two forms are too dissimilar, the coefficient of reliability will be too low. The rule is that two forms should be similar enough to tap or sample the same ability or type of conduct, but not so similar that errors will be correlated. Under such conditions the coefficient of reliability will be a true measure of the precision of measurement of the function or trait in question.

Thus, to determine the reliability of conduct tests, it is necessary to measure two similar, but not identical, samples of the conduct in question. Theoretically at least, situations to which pupils react deceptively are so complex that we need never fear identity. But in character testing we may get correlations between errors without having identical situations.

In order to check these difficulties, we have determined the reliabilities of certain of our techniques both by correlating the deception scores on two similar tests and by correlating two applications of the same test. The former procedure will be expected to yield coefficients that are too high, the latter coefficients that are too low. From the two we may hope to approximate the truth.

THE RELIABILITY OF THE IER SCHOOL AND HOME DECEPTION TESTS

The type of deception which the IER school and home deception tests are designed to measure is that of copying from a key while taking a classroom examination. A true deception score would be either the mean amount of such illegitimate copying on an infinite number of varied examinations or else the proportion of tests on which cheating took place in a very large number of such opportunities. We shall assume the former as the true score. The deviation of any obtained Xi cheating score on any one of these tests from the theoretical true score will be regarded as an error in the measurement of this type of deception. The problem is to secure another measure of the same type of behavior in such a way that its errors will be uncorrelated with those made when the first measure was taken. This may be done by repeating the same tests or giving similar tests. As has been stated, we did both. We repeated the IER tests on a population of 120 after a period of six months, and we also gave three classroom deception tests that may be regarded as similar.

A. The Repetition of Identical Tests

In repeating the IER tests, the data were secured by retesting 120 pupils in population C after a period of six months. The first tests were given in March, 1925, and the retests in October, 1925. The pupils were in grades five to eight and ranged in age from 9 to 15. An effort was made to keep the conditions the same for both testings. In this we were not successful. For one thing, the pupils had all advanced to another classroom. But the most disturbing factor was that on the day of the retest the children had visited a large store in the city during the forenoon and certain of them expected to go home at noon. To be held in school for a test naturally disgruntled some of them. There may have been other disturbing factors too subtle to be noticed. All such changes in the conditions would tend to lower the correlation, so that the obtained coefficients are probably not too high even though the tests are identical. The essential data are given in Table LXXXIII.

TABLE LXXXIII

Reliability Data for the IER Tests

Test	March Testing		October Testing		Correlation
	Mean Xi	SD Xi	Mean Xi	SD Xi	
Arithmetic	− 5.50	3.76	− 5.20	3.29	.484
Completion	− 1.66	1.82	− 1.20	1.50	.485
Information	− 2.32	2.15	− 1.87	2.20	.535
Word Knowledge	− 3.24	3.03	− 1.11	2.63	.205

It will be noted that the mean amount of cheating is somewhat less on the second occasion than on the first. This may be due to the unusual situation under which the retests were given. It may be also that the purpose leaked out, for a few weeks after the March tests the Pupil Data Sheet had been given, asking among other things whether the pupils cheated or not. Just what effect this had on the October cheating we do not know. At any rate, the above correlations are more likely to be too low than too high.

The figures show that a single classroom test will correlate with itself about .50, and the home test about .20. From comparison with reliabilities of intelligence tests, we infer that these correlations are rather satisfactory in view of the fact that one test here is about equivalent to one single test in a battery of intelligence tests. The separate tests of the Army alpha have reliabilities probably no higher than .50. When the three classroom tests are combined, the March scores correlate .752 with the October scores.

The correlations in Table LXXXIII do not as a matter of fact represent the true relation between cheating in March and October. The true correlations are somewhat higher. The raw *r*'s of Table LXXXIII are between test cheating scores, which contain part deception and part errors of measurement, the errors tending to pull the *r*'s down. The error arises by virtue of the fact that each cheating score is a difference between two imperfect measures of an ability. This may be illustrated by the IER Arithmetic test. The opportunity to cheat was given on form A, and form B was given under supervised conditions. The scores of form A are partly honest ability, partly cheating, and partly errors of measurement; the scores of form B are partly honest ability and partly errors of measurement. Hence the cheating score, $B - A$, contains part deception and part errors of measurement incurred in measuring arithmetical ability. That is, $B - A = E + F$, in which F is cheating and E is error made in measuring not deception, but the ability tested by A and B. Such errors will be referred to henceforth as errors of type I. Errors of type II are deviations of cheating scores (when freed from errors of type I) from the theoretical true deception score. Individual cheating scores cannot be freed from errors of either type I or type II, but correlation coefficients between these scores and other deception scores or between the scores and other variables can be freed from the effects of both types of errors. This is accomplished by measuring these errors and taking them out. Errors of type I are measured in the standardization process where both forms A and B were given under supervised conditions. Errors of type II are measured by repeating the whole process, and their influence may be eliminated from correlation coefficients by applying the usual corrections for attenuation. Formulas for correcting coefficients of correlation for errors of type I are given in Chapter VI, Book Two, where a fuller treatment of this topic is offered. Applying the correction for errors of type I to the correlations in Table LXXXIII, we have Table LXXXIV.

TABLE LXXXIV

CORRECTED RELIABILITY COEFFICIENTS FOR IER TESTS

TESTS	RAW r	r CORRECTED FOR ERRORS OF TYPE I
Arithmetic	.484	.530
Completion	.485	.790
Information	.535	.710
School tests	.752	.863
Word Knowledge		
Home test	.205	.240

For the combined three classroom tests the self-correlation goes up to .863, which is satisfactory, considering the nature of the tests and the conditions under which the October tests were given.

The reliability of the Word Knowledge test, which is taken outside the classroom, is very low (.240). The correlations between this test and the classroom tests are equally low. But this is not surprising when we consider that the classroom situation is fairly homogeneous; all pupils are given equal opportunity to deceive; all are working under the same conditions. But outside the classroom the situations are varied, and many factors enter to reduce the correlation. These factors are unknown and unmeasured, so that we cannot correct for them and shall have to be content with a low reliability figure.

B. INTERCORRELATION OF TESTS

The reliability coefficients obtained from repeated tests may now be checked by finding the intercorrelations between the three classroom tests. That is, we shall now regard each of the three tests as three forms of the same effort to measure this type of deception. The only difference in the three tests, aside from the difference in materials, is that on the Arithmetic test the answer sheets are passed out with the test, whereas on the other two they are passed out after the test has been taken. In each case deception is copying from a key, and the only variables are the thing copied, the length of the tests, and the manner of passing out the keys. The correlations are given in Table LXXXV.

TABLE LXXXV

INTERCORRELATION OF IER SCHOOL TESTS

TESTS	RAW r	r CORRECTED FOR ERRORS OF TYPE I	N
Arithmetic and Completion	.454	.696	1115
Arithmetic and Information	.481	.614	1120
Information and Completion	.450	.777	1099
Average	.462	.696	

Thus, on the average, when freed from errors of type I, one copying test will correlate with another .696. Applying the Spearman-Brown prophecy formula, we find that, if one will correlate with one .696, three will correlate with three .871, which is a little higher than the .863 obtained previously between three and the same three repeated.* Since we should have expected the latter to be lower, we shall use it as the reliability figure for the IER school deception technique.

THE RELIABILITY OF THE SPEED TESTS

A. BY REPEATED TESTS

The data from the Speed tests were secured from two populations, one having grades three to six, the other grades seven to nine. All groups were tested on two occasions one week apart. On both occasions the full procedure was used, that is, all were asked to score their own papers on the third trial. Since the technique was unchanged, we should expect errors to be correlated, giving coefficients that are too high. The time between the tests was only a week, and factors tending to cause cheating on one occasion were more likely to operate on the second occasion than in case of the IER tests, which were repeated after six months. The facts are given in Table LXXXVI.

---

* The Spearman-Brown formula shows that four with four would yield a coefficient of .90 when the corrected r's are substituted.

TABLE LXXXVI

RELIABILITY DATA FOR THE SPEED TESTS

Row	Additions	Number Checking	Cancellation of A's	Digit Symbols	Dots	Cancellation of Digits (4's)
A. Mean Da_1	+ 4.00	− 1.00	− 1.00	+ 5.50	**	+ 3.00
B. Mean Db_1	− .74	− .32	+ .70	+ .90		+ .44
C. Mean Da_2	+ 6.95	+ 6.20	7.93	15.00	37.40	16.12
D. Mean Db_2	+ 7.70	+ 6.14	7.87	13.56	39.80	16.15
E. SD_{Da_1}	5.70	2.88	2.98	6.39		4.46
F. SD_{Db_1}	4.95	3.28	3.36	5.92		4.64
G. SD_{Da_2}	8.85	4.95	7.95	12.44	23.50	17.82
H. SD_{Db_2}	10.95	4.34	9.15	13.48	27.86	17.04
I. $SD_{F\ 2}$	6.76	4.02	7.37	10.67	12.36	17.25
J. SD_{Fb_2}	9.61	2.84	8.51	12.11	19.44	16.39
K. $r_{Da_2\ Db_2}$	.424	.322	.502	.365	.397	.490
L. $r_{Fa_2\ Fb_2}$	.632	.605	.582	.473	.600	.525

The notations for this table are as follows: D stands for the difference between two scores. D_1 is the difference between the first and second trials, and D_2 is the difference between the second and third trials. *a* stands for the first occasion on which the battery was administered, and *b* for the second occasion. Thus row K contains the correlations between the second difference of the first occasion and the second difference of the second occasion.

This is the raw reliability measure. The reliability coefficients corrected for errors of type I are in row L, where F stands for the cheating or falsification factor in the D_2's of the two occasions.*

From row L in Table LXXXVI we see that the reliability coefficients for the separate tests are really no better than they were for the separate IER tests. In fact, not so good. On the other hand, each of the Speed tests consumes not over five minutes' total time, while the shortest IER test (Information) takes a total of 15 to 20 minutes and the longest over an hour. However, when we combine the six Speed tests into a single total score and correlate the first day's cheating score with the second, the correlation, corrected for errors of type I, is .887, slightly better than for the IER tests. But there are six Speed tests and only three IER tests. Further, as we shall presently see, this figure is somewhat too high.

B. By Intercorrelation of Similar Tests

We shall now regard each of the six Speed tests as a different form of the same test, each aiming to measure the type of deception which exhibits the tendency to add on more scores illegitimately. The average intercorrelation of the six Speed tests is .44 when cleared of type I errors. This means that one Speed test will correlate on the average .44 with another. Substituting in the Spearman-Brown formula, six tests will correlate with six other tests .825, which is lower than the .887 obtained by retesting. We are of the opinion that the .887 is too high and that the .825 is nearer the truth.

THE RELIABILITIES OF THE OTHER TECHNIQUES

The three Coördination tests are quite similar, varying only in the nature of the material; the three Puzzle Performance tests, while quite dissimilar in appearance, yet involve the same kind of deception, namely, faking a solution. The four Athletic Contests are rather dissimilar in both form and content; the

---

* See Chapter VI for method of correction.

Party tests are really too dissimilar to be regarded as forms of the same test. The SA lying tests have about the same degree of similarity as two forms of an intelligence test.*

Summing up such data as we have concerning the reliabilities of the techniques used and stating the results in terms of the types of conduct, we have results shown in Table LXXXVII.

TABLE LXXXVII

Reliabilities of Techniques Used for Measuring Deception

Types of Conduct	1†	2‡
1. Copying from a key or answer sheet (3 tests)	.871	.863
2. Copying from a key or answer sheet (duplicating technique) (7 tests)	.825	
3. Adding on more scores (6 Speed tests)	.825	.887
4. Peeping when eyes should be shut (3 Coördination tests)	.721	.750
5. Faking a solution to a puzzle (3 tests)	.750	
(2 tests, Pegs and Fifteen Puzzle)	.620	
6. Faking a score in a physical ability test (4 tests)	.772	
7. Lying to win approval	.836	
8. Getting help from a dictionary or from some person on one test done at home		.240

† The correlations in this column are based on intercorrelations between similar forms, and predicted by the Spearman-Brown formula.

‡ The correlations in this column are based on retests.

In the Parties and money tests we have only a fact score, and the Party tests, as we just stated, are too dissimilar to risk computing a coefficient of reliability.

We seem to have reliable measures of seven kinds of deception, with no data on two more kinds. The next question is whether we have in the sum of all these a reliable measure of dishonesty, or deception, or a still more generalized type of conduct. We shall have to postpone the discussion of this point until the validity of these techniques has been treated.

---

* As noted in Book One, the two forms of the SA lying test have certain items in common, which doubtless affects the correlation between them.

The correlations in Table LXXXVII are free (presumably) from errors of type I and therefore represent the self-correlation of actual cheating in the situations they represent. As such they indicate the precision with which we have measured the various types of deception.

When deception is correlated with other variables such as age, intelligence, grade, and the like, the raw correlations between scores and these variables should be corrected first for errors of type I; they may be corrected for errors of type II also. Errors of type II, it will be recalled, are deviations of the actual cheating scores (when free from errors of type I) from true scores. Correction for errors of type II may be made by applying the Spearman correction formula for attenuation or a modification of it. The statistical procedures involved in handling errors of type I will next be discussed.

CHAPTER VI

METHODS OF CORRECTING COEFFICIENTS OF CORRELATION FOR THE INFLUENCE OF ERRORS OF MEASUREMENT

In the preceding chapter it was noted that errors of type I, that is, those arising from imperfect measures of the abilities tested by the examination on which cheating was permitted, cannot be eliminated from individual scores, but that their effects on coefficients of correlation can be determined. Certain formulas for correcting correlations for these errors will be stated here. These fall into seven main groups according to the variables that are being correlated.

CASE I, IN WHICH THE SAME DECEPTION TESTS ARE REPEATED, USING THE DOUBLE-TESTING TECHNIQUE

Wherever the double-testing technique is used, the cheating score is always a *difference* between an honest performance and one in which cheating is possible. Call this difference D. Thus D is composed partly of cheating and partly of error. Let E stand for the error, or that part of the difference that is not cheating, and F for cheating or falsification. Then $D = E + F$. When the same test is repeated as a deception test, we have two D's. Call the first one Da and the second (the retest) Db. Then $Da = Ea + Fa$ and $Db = Eb + Fb$. It is required to find the correlation between Fa and Fb. By substitution in the Pearson-product-moment formula, we have:

$$r_{DaDb} = \frac{r_{FaFb} \cdot \sigma_{Fa} \cdot \sigma_{Fb} + (r_{FaEb} \cdot \sigma_{Fa} \cdot \sigma_{Eb} + r_{FbEa} \cdot \sigma_{Fb} \cdot \sigma_{Ea} + r_{EaEb} \cdot \sigma_{Ea} \cdot \sigma_{Eb})}{\sigma_{Da}\sigma_{Db}}$$

Each of the three terms in the parenthesis in the numerator involves the correlation of an E factor with something else. If the E's are truly chance errors, these r's will all be zero. The standardization data derived by giving each test under strictly supervised conditions furnishes evidence that this is the case. This evidence will be presented later in this chapter. For the present we shall assume that they are zero and drop them out. Then by transposing, the formula is:

$$r_{\mathrm{FaFb}} = \frac{r_{\mathrm{DaDb}} \cdot \sigma_{\mathrm{Da}}\sigma_{\mathrm{Db}}}{\sigma_{\mathrm{Fa}}\sigma_{\mathrm{Fb}}}$$

The numerator is obtained from the raw cheating scores and is referred to in Chapter V as the raw r and the raw SD. σ_{Fa} and σ_{Fb} are found from σ_{Da} and σ_{Db} and from the sigmas of the standardization material. The derivation is as follows. If we start with the equation

$$\mathrm{Da} = \mathrm{Ea} + \mathrm{Fa},$$

then

$$\sigma_{\mathrm{Da}}^2 = \sigma_{\mathrm{Ea}}^2 + \sigma_{\mathrm{Fa}}^2 + 2(r_{\mathrm{EaFa}} \cdot \sigma_{\mathrm{Ea}} \cdot \sigma_{\mathrm{Fa}}).$$

Assuming as we did above that the last member of the right hand equation is zero and transposing, we have

$$\sigma_{\mathrm{Fa}}^2 = \sigma_{\mathrm{Da}}^2 - \sigma_{\mathrm{Ea}}^2 \quad \text{and}$$
$$\sigma_{\mathrm{Fb}}^2 = \sigma_{\mathrm{Db}}^2 - \sigma_{\mathrm{Eb}}^2.$$

Hence

$$\sigma_{\mathrm{Fa}} = \sqrt{\sigma_{\mathrm{Da}}^2 - \sigma_{\mathrm{Ea}}^2}$$
$$\sigma_{\mathrm{Fb}} = \sqrt{\sigma_{\mathrm{Db}}^2 - \sigma_{\mathrm{Eb}}^2}$$

The correction formula then becomes

$$r_{\mathrm{FaFb}} = \frac{r_{\mathrm{DaDb}} \cdot \sigma_{\mathrm{Da}} \cdot \sigma_{\mathrm{Db}}}{\sqrt{\sigma_{\mathrm{Da}}^2 - \sigma_{\mathrm{Ea}}^2}\sqrt{\sigma_{\mathrm{Db}}^2 - \sigma_{\mathrm{Eb}}^2}}. \qquad \text{Formula (1)}$$

Every term is now obtainable from the data except σ_{Ea}^2 and σ_{Eb}^2, which are assumed to be the same as σ_{D}^2 (or σ_{E}^2) in the standardization experiment, where no chance for cheating was given.

When Xi scores are used and a is the Xi score in the first test and b the Xi score of the second test and when σ_{E} is put equal to 1.00, the formula becomes

$$r_{\mathrm{FaFb}} = \frac{r_{\mathrm{ab}} \cdot \sigma_{\mathrm{a}} \cdot \sigma_{\mathrm{b}}}{\sqrt{\sigma_{\mathrm{Da}}^2 - 1}\sqrt{\sigma_{\mathrm{Db}}^2 - 1}}. \qquad \text{Formula (2)}$$

This formula involves two basic assumptions: (1) that the E factors are uncorrelated with each other and with deception, and (2) that their standard deviations are always the same as found in the standardization experiments. As evidence that the former is true we submit the following: In the case of the Speed tests three trials were given — the first two were supervised and the third one was not. Hence there are two D's: D_1 is trial 2 minus trial 1 and D_2 is trial 3 minus trial 2. Now since trials 1 and 2 were "honest," D_1 equals E_1 and D_2 equals E_2 plus F_2. On two populations these tests were repeated, so that we have the following data:

Da_1, which is equal to Ea_1
Da_2, which is equal to $Ea_2 + Fa_2$
Db_1, which is equal to Eb_1
Db_2, which is equal to $Eb_2 + Fb_2$

In these populations the following correlations are zero: $r_{Ea_1Eb_1}$, $r_{Ea_1Fa_2}$, and $r_{Eb_1Fb_2}$. But the assumption made in the formula is that $r_{Ea_2Eb_2} = 0$, $r_{Ea_2Fb_2} = 0$, and $r_{Eb_2Fa_2} = 0$. These r's cannot be obtained. Nevertheless, wherever we are able to correlate an E factor with another E factor or with an F or a D, the r's are always zero.

One more bit of evidence of the same sort is found in the Speed standardization data, where cheating was not permitted. Here

$$Da_1 = Ea_1,$$
$$Da_2 = Ea_2,$$

and
$$r_{Ea_1Ea_2} = 0.$$

The second assumption, that the σ_E^2 for any population will be the same as found in the standardization populations, rests on the proviso that in every case the distribution of abilities represented is the same. Even so, σ_E will fluctuate within the range of four times its PE. But our standardization populations are all large (300 or more) and our σ_E's are all from 10 to 50 times greater than their PE's.

In the Speed tests we were able to dodge this difficulty somewhat by taking advantage of the fact that in the standardization data we have two "honest" differences, so that $D_1 = E_1$ and $D_2 = E_2$. We assume, then, that when cheating is allowed the *ratio* of Ea_2 to Ea_1 will be the same as in the standardization process. If this is true, then:

$$\sigma_{Ea_2} = \frac{\sigma_{Ea_1} \cdot \sigma_{E_2}}{\sigma_{E_1}}$$

$$\sigma_{Eb_2} = \frac{\sigma_{Eb_1} \cdot \sigma_{E_2}}{\sigma_{E_1}}$$

These determinations are correct only when

$$r_{Ea_1Ea_2} = r_{Eb_1Eb_2} = r_{E_1E_2},$$

and we may be reasonably certain that this is true.

CASE II, IN WHICH THE SAME DECEPTION TESTS ARE REPEATED, USING THE IMPROBABLE ACHIEVEMENT TECHNIQUE

In all tests based on this technique the raw score is simply the total number of points achieved either honestly or dishonestly. The Xi score is the difference between the raw score and the mean honest performance of the standardization group divided by the SD of the distribution of that group. Since the raw scores were used in all computations, we shall consider them here. In symbols let S be any score, H honest ability, and F falsification. Then $S = H + F$. Now if a test is repeated, we have $Sa = Ha + Fa$ for the first testing and $Sb = Hb + Fb$ for the second. It is required to find r_{FaFb}.

$$r_{SaSb} = \frac{r_{FaFb} \cdot \sigma_{Fa} \cdot \sigma_{Fb} + r_{HaFb} \cdot \sigma_{Ha}\sigma_{Fb} + r_{HbFa} \cdot \sigma_{Hb} \cdot \sigma_{Fb} + r_{HaHb} \cdot \sigma_{Ha} \cdot \sigma_{Hb}}{\sigma_{Sa} \cdot \sigma_{Sb}}$$

Transposing and rearranging, we have

$$r_{FaFb} = \frac{r_{SaSb} \cdot \sigma_{Sa} \cdot \sigma_{Sb} - (r_{HaFb} \cdot \sigma_{Ha} \cdot \sigma_{Fb} + r_{HbFa} \cdot \sigma_{Hb} \cdot \sigma_{Fa} + r_{HaHb} \cdot \sigma_{Ha} \cdot \sigma_{Hb})}{\sqrt{\sigma_{Sa}^2 - \sigma_{Ha}^2 - 2(r_{SaHa} \cdot \sigma_{Sa}\sigma_{Ha})}\sqrt{\sigma_{Sb}^2 - \sigma_{Hb}^2 - 2(r_{SbHb} \cdot \sigma_{Sb}\sigma_{Hb})}}.$$

Unfortunately we actually know only the first term of the numerator. We have assumed, however, that the sign of the first two terms in the parenthesis of the numerator will be minus in the case of those tests where this technique was used, and that the sign of the last terms will be plus; and further, that the sum of the first two will equal the last, making the net value of the parenthesis zero. We shall assume further that the last term of each member of the denominator is zero. We admit that these assumptions are much more precarious than those made in formula (1). Whether they hold or not depends mainly on the nature of the test materials. In the case of the Coördination and Performance Puzzle tests we believe they do hold, but we have no proof.

Based on these assumptions, the formula reduces to

$$r_{FaFb} = \frac{r_{SaSb} \cdot \sigma_{Sa} \cdot \sigma_{Sb}}{\sqrt{\sigma_{Sa}^2 - \sigma_H^2}\sqrt{\sigma_{Sb}^2 - \sigma_H^2}}, \qquad \text{Formula (3)}$$

in which σ_H^2 is derived from the standardization group.

CASE III, IN WHICH TWO DIFFERENT DECEPTION TESTS ARE CORRELATED, EACH BASED ON THE DOUBLE-TESTING TECHNIQUE

The formula here will be precisely the same as formula (1) except that the subscript *a* will refer to one test and *b* to the other.

CASE IV, IN WHICH TWO DECEPTION TESTS ARE CORRELATED, EACH BASED ON THE IMPROBABLE ACHIEVEMENT TECHNIQUE

The formula is the same as formula (3).

CASE V, IN WHICH TWO DECEPTION TESTS ARE CORRELATED, ONE BASED ON THE DOUBLE-TESTING TECHNIQUE AND ONE ON THE IMPROBABLE ACHIEVEMENT TECHNIQUE

For the test based on the double-testing technique, let D = E + Fa as usual. For the test based on the improbable achievement technique, let S = H + Fb. Then

$$r_{FaFb} = \frac{r_{DS} \cdot \sigma_D \cdot \sigma_S - (r_{EH} \cdot \sigma_E \cdot \sigma_H + r_{EFb} \cdot \sigma_E \cdot \sigma_{Fb} + r_{HFa} \cdot \sigma_H \cdot \sigma_{Fa})}{\sqrt{\sigma_D^2 - \sigma_E^2}\sqrt{\sigma_S^2 - \sigma_H^2}}$$

Again we assume the three terms in the parenthesis of the numerator are zero, and the formula becomes

$$r_{\mathrm{FaFb}} = \frac{r_{\mathrm{DS}} \cdot \sigma_{\mathrm{D}} \cdot \sigma_{\mathrm{S}}}{\sqrt{\sigma_{\mathrm{D}}^2 - \sigma_{\mathrm{E}}^2}\sqrt{\sigma_{\mathrm{S}}^2 - \sigma_{\mathrm{H}}^2}}. \qquad \text{Formula (4)}$$

CASE VI, IN WHICH ONE DECEPTION TEST IS CORRELATED WITH SOME OTHER VARIABLE, AND IN WHICH DECEPTION IS MEASURED BY THE DOUBLE-TESTING TECHNIQUE

Let D = the deception difference or raw score
Let X = the other variable
Let E = the error of type I as in case I above
Let F = the falsification factor as usual

r_{Fx} is the correlation desired. By the procedure followed in case I,

$$r_{\mathrm{Fx}} = \frac{r_{\mathrm{Dx}} \cdot \sigma_{\mathrm{D}} - r_{\mathrm{Ex}}\sigma_{\mathrm{E}}}{\sqrt{\sigma_{\mathrm{D}}^2 - \sigma_{\mathrm{E}}^2}}. \qquad \text{Formula (5)}$$

Here all terms will be known except the last one of the numerator, which must in each case be determined by experiment. If X is such a factor as age, grade, or intelligence, the correlation between it and E may be obtained from the standardization data. The only necessary assumption is, then, that this term will be the same for any population, as it is for the standardization population. By carefully studying the populations in which the formula is used, fairly accurate results will be secured. If Xi scores are used and *a* is the Xi score, we have

$$r_{\mathrm{Fx}} = \frac{r_{\mathrm{ax}} \cdot \sigma_{\mathrm{a}} - r_{\mathrm{Ex}}}{\sqrt{\sigma_{\mathrm{D}}^2 - 1}}. \qquad \text{Formula (6)}$$

CASE VII, IN WHICH A DECEPTION TEST BASED ON THE IMPROBABLE ACHIEVEMENT TECHNIQUE IS CORRELATED WITH ANOTHER VARIABLE

Let S = the deception score
Let X = the other variable
Let H = the honest ability score in the deception test
Let F = the factor of falsification

Then

$$r_{\mathrm{Fx}} = \frac{r_{\mathrm{Sx}} \cdot \sigma_{\mathrm{S}} - r_{\mathrm{Hx}} \cdot \sigma_{\mathrm{H}}}{\sqrt{\sigma_{\mathrm{S}}{}^2 - \sigma_{\mathrm{H}}{}^2}} \qquad \text{Formula (7)}$$

Again $r_{\mathrm{Hx}}\sigma_{\mathrm{H}}$ must be determined by experiment. It may be secured from the standardization data, with the assumption that it will be the same in other populations. In subsequent chapters these formulas will be referred to by number.

CHAPTER VII

VALIDITIES OF THE TECHNIQUES

Validity of character tests is here conceived in two ways: first as empirical validity, measured by the correlation between the tests and ratings by acquaintances, conduct records, confessions, and the like; and second as theoretical validity, measured by the adequacy of the sampling of conduct by test situations and responses. These concepts have been discussed in Chapter V of Book One, where reference was made to this chapter for consideration of the statistical problems.

VALIDATION BY RATINGS

The dangers and pitfalls in rating schemes are too well known to merit discussion here. Suffice it to say that we are hardly justified in using ratings as a criterion without determining in some way their own validity and reliability. By the validity of ratings we shall mean the agreement between the obtained rating and the average of a large number of independent ratings made by a large number of persons equally and intimately acquainted with the conduct of the subjects or, more specifically, the correlation between ratings of the same subject by different judges. By reliability we shall mean the constancy of any one judge's ratings, or the correlation between two sets of ratings made by the same judges, but separated in time sufficiently to avoid memory interference.

We may remark at the outset that dishonesty or deception is peculiarly ill-adapted to rating for the simple reason that such behavior is successful only when concealed. Of course, it is not always successful, and the experienced teacher is frequently aware of her pupils' efforts to falsify. We shall proceed on the maxim of Lincoln, that you cannot fool all the people all the time.

A. The Reliability of the Ratings Used as Criteria for the Empirical Validation of the IER School and Home Tests

The data were secured from school C. Each teacher rated her pupils twice, with an interval of six weeks between the ratings. The first ratings were made on a graphic scale called scale A, as follows:

Honesty	5	4	3	2	1
	Absolutely honest	Reliable	Usually honest	Unreliable	Cheats or steals

Instead of the usual method of checking on the line, the teacher simply placed after each pupil's name a figure indicating the point on the scale where she would place him. There are only five figures given; hence there are only five steps in this scale. By marking all pupils on one item at a time, this method combined the advantages of the graphic method and the ranking method.*

The second ratings were made on a different scale, partly to offset the memory element. This was called scale B and referred to the subject's general honesty. The teachers were asked to consider the pupil's general uprightness, his sense of duty and honor, his fairness in all things, etc. The rating scheme was as follows:

Let 0 mean dishonest always, everywhere, and with everyone.
Let 1 mean nearly always dishonest, rarely honest.
Let 2 mean usually dishonest, sometimes honest.
Let 3 mean about 70–30, that is, dishonest 70% of the time.
Let 4 mean about 60–40, that is, dishonest about 60% of the time.
Let 5 mean 50–50, honest about as often as dishonest.
Let 6 mean 40–60, honest 60% of the time.
Let 7 mean 30–70, honest 70% of the time.
Let 8 mean usually honest, sometimes dishonest.
Let 9 mean nearly always honest, rarely dishonest.
Let 10 mean always, everywhere, and with all persons perfectly honest.

---

* Cf. article by Freyd, Max, "The Graphic Rating Scale," *Journal of Educational Psychology*, Vol. XIV, pp. 83–101.

In this school eighteen teachers rated their pupils for general honesty on these two scales. Of these eighteen, we used only nine. The basis of selection was twofold. First, we threw out the ratings of all the teachers who used only one or two steps on the scale. Some teachers rated all or nearly all of their pupils 4 or 5 on scale A and 9 or 10 — sometimes 8 or 9 — on scale B. Obviously, we could not use the ratings in which only two categories were used and two high ones at that. It is not to be expected that in a group of thirty or forty unselected pupils all would be at the top of any honesty scale.

Second, we computed the correlation between the first and second ratings of each teacher and found that they ran from zero or slightly negative to as high as + .80. The mean self-correlation of these ratings was .50. We arbitrarily threw out all below .50. Applying these two criteria of selection, we have the data of Table LXXXVIII.

TABLE LXXXVIII

RELIABILITY OF HONESTY RATINGS

GRADE	CORRELATION BETWEEN FIRST AND SECOND RATING	N
8A	.63	34
8A	.66	37
8B	.73	38
7B	.68	39
7B	.51	44
6A	.84	40
6B	.71	30
6B	.64	36
Special low IQ	.80	24
		322

The average *r* between the two ratings for this group of 322 is .69.

B. THE VALIDITY OF THE RATINGS USED AS CRITERIA FOR VALIDATING THE IER SCHOOL AND HOME TESTS

We validated our ratings by agreement among raters. If all agree that pupil A is honest, we are more likely to trust the verdict than we should be if there were dissenting votes. (We realize, of course, that there are times when the majority is wrong and the minority right, but this is the exception rather than the' rule.) Our data for this procedure were secured from ratings on nearly 600 pupils by two or more teachers in population B.

Each pupil in the elementary school was rated once by each of the two platoon teachers. In the junior high school (grades seven, eight, and nine), each pupil was rated by three teachers, each rating independently of the other two. In the elementary school there were one hundred forty-seven pupils in four groups. In the junior high school there were four hundred forty-six cases in twelve groups. These ratings were all made on scale A by the method previously described.

All sixteen groups of ratings were used, but separated into two parts according to the extent to which the rater distributed the ratings. Those who were rated by the use of only two or three categories of the scale (usually steps 3, 4, and 5, 90% of the pupils being rated 4 or 5) we called the "undistributed" group. Those who were rated by the use of the full scale (some of the ratings being as low as 1 and some high, with an average around the middle) we called the "distributed" group.

The correlation between the ratings of the home room teacher and the average of the other two is shown in Table LXXXIX.

TABLE LXXXIX

RELATION BETWEEN INDEPENDENT HONESTY RATINGS

TEACHER	DISTRIBUTED GROUP	N	TEACHER	UNDISTRIBUTED GROUP	N
A	.37	147	U	.59	88
W	.82	92	M	.39	116
S	.66	87	P	.57	54
R	.49	34	F	.36	114
H	.51	117	K	.64	108
Average	.57			.51	

This table reads: Teacher W rated ninety-two pupils, and her ratings correlated .82 with the average of the other two ratings.

The correlations of the "undistributed" groups are of course very much affected by broad categories. In fact most of them were simply fourfold tables. They are less reliable than those of the "distributed" groups.

C. Value and Application of the Criterion

Thus we see that our rating criterion is not in itself very satisfactory. We find that in one school the teachers rated the same pupils on a second occasion so as to give an average correlation of only .69 between the first and second ratings. In another school two or more raters of the same pupil agreed well enough to give an average correlation of a little better than .50 among the ratings.*

We are now ready to take up the question of the validity of our tests in terms of teachers' ratings. The particular tests used here were the IER tests, where deception was practiced by copying from a key on the tests taken in school and getting illegitimate help from the dictionary or another person on the test that was taken home. The data secured from school C (where each teacher rated the same pupils twice) are presented in Table XC.

TABLE XC

Relation between IER Tests and Honesty Ratings, School C

Test	First Rating			Second Rating		
	Raw r	Corrected r †		Raw r	Corrected r †	
1. Arithmetic	.304	.320	Corrected	.290	.302	Corrected
2. Completion	.278	.397	for	.211	.280	for
3. Information	.117	.142	attenuation	.211	.257	attenuation
1–3 combined		.313	.40		.313	.40
4. Word Knowledge (home)	.001			.008		

† Errors of type I. See Chapter VI.

The correlations between deception and the first and second ratings are given separately. The left-hand part of the rating columns in each case is the raw *r*, and the right-hand is the raw *r* corrected for errors of type I in the IER material. When we pool the first and second ratings and correlate the combined effect with the sum of the classroom tests, the average *r* of .313 goes up to .35, which when corrected for attenuation becomes .45.

---

* Corrected for attenuation, this goes up to .70.

The data on the mid-western city where each pupil was rated by two or more teachers are given in Table XCI.

TABLE XCI

RELATION BETWEEN IER TESTS AND HONESTY RATINGS, SCHOOL SYSTEM B

Test	Distributed Group			Undistributed Group		
	Raw *r*	Corrected *r* *		Raw *r*	Corrected *r* *	
1. Arithmetic	.389	.477	Corrected	.157	.194	Corrected
2. Completion	.084	.128	for	.148	.166	for
3. Information	.288	.360	attenuation	.181	.238	attenuation
1–3 combined		.386	.495		.253	.32
4. Word Knowledge (home)	.006			.002		

* Errors of type I. See Chapter VI.

In this table the correlations are between the sum of three independent ratings and the test. When all ratings are thus combined and the three school tests combined, the best we get is .386, which is slightly better than the .35 obtained on the other school population. But the two figures are near enough together to convince us that this method of rating honesty or dishonesty will not give correlations as high as .50 with the copying-from-answer-sheet type of dishonesty, even when all types of errors are eliminated.

One objection to this whole rating experiment may be that it is too much to ask teachers to rate their pupils on *general honesty.* Why not confine the rating to classroom honesty, which the teachers are supposed to know more about? Furthermore, the tests used presumably measure classroom honesty better than they measure honesty in general. To test this suggestion, we asked each teacher in another school population (school system A) to rate her pupils on both general and specific honesty. We had the same teachers rate also on general intelligence and a specific ability, word knowledge. So we have then four ratings on each child: (1) general intelligence, (2) word knowledge, (3) general honesty, (4) cheating on examinations. Each teacher was supplied with a sheet of paper containing the names of her pupils at the left margin, and a series of columns, numbered, with headings as follows:

Names	1 Intelligence	2 Vocabulary	3 Honesty	4 Cheating
John				
Harry				
George				

On a separate sheet were given the directions for rating and the explanation of the terms and grades used. It was expected that the rater would take one column at a time and rate the entire group on one fact at a time. The explanations were as follows:

Directions for Rating in School System A

1. General Intelligence. In the column marked (1) please rate each pupil for general intelligence on the scale given below. By "general intelligence" we mean how bright or dull the pupil is, how quick he is to see the point, to grasp knowledge, and to cope with a new or unusual situation.

Let 0 mean the intelligence of a very, very dull pupil, one so dull that you are not likely to find him in the fifth grade.

Let 1 mean a dull pupil, the kind that you will occasionally have.

Let 2 mean dull, the kind that you are likely to have in any class.

Let 3 mean somewhat below the average in intelligence.

Let 4 mean little below the average.

Let 5 mean average.

Let 6 mean little above the average.

Let 7 mean somewhat above average.

Let 8 mean bright, the kind that you usually have in every class.

Let 9 mean bright, the kind you will have only occasionally.

Let 10 mean bright, very bright, the kind that you have only once in every three or four years.

2. Vocabulary — Knowledge of Meaning of Words. In column (2) please rate your pupils on this trait.

Let 0 mean the pupil who knows the meaning of only a few short words.

Let 1 mean the pupil who knows most one-syllable words and many two-syllable words.

Let 2 mean considerably below average.

Let 3 mean somewhat below average.

Let 4 mean little below average.

Let 5 mean the pupil who is about average for his group.

Let 6 mean little above average.

Let 7 mean somewhat above average.

Let 8 mean considerably above average.

Let 9 mean very good in this respect, knows the meaning of nearly every word he comes across.

Let 10 mean never gets stuck, knows them all.

3. General Honesty. Consider his general " uprightness," his sense of duty and honor, his fairness in all things, etc.

Let 0 mean dishonest always, everywhere, and with everyone.

Let 1 mean nearly always dishonest, rarely honest.

Let 2 mean usually dishonest, sometimes honest.

Let 3 mean about 70–30, that is, dishonest 70% of the time.

Let 4 mean about 60–40, that is, dishonest about 60% of the time.

Let 5 mean 50–50, honest about as often as dishonest.

Let 6 mean 40–60, honest 60% of the time.

Let 7 mean 30–70, honest 70% of the time.

Let 8 mean usually honest, sometimes dishonest.

Let 9 mean nearly always honest, rarely dishonest.

Let 10 mean always, everywhere, and with all persons perfectly honest.

4. Cheating on Examinations. Consider only his tendency to cheat on tests or examinations.

Let 0 mean pupil who cheats every chance he gets.
Let 1 mean pupil who cheats 9 times out of ten.
Let 2 mean pupil who cheats 8 times out of ten.
Let 3 mean pupil who cheats 7 times out of ten.
Let 4 mean pupil who cheats 6 times out of ten.
Let 5 mean pupil who cheats 5 times out of ten.
Let 6 mean pupil who cheats 4 times out of ten.
Let 7 mean pupil who cheats 3 times out of ten.
Let 8 mean pupil who cheats 2 times out of ten.
Let 9 mean about once in ten opportunities.
Let 10 mean never cheats under any conditions.

Over against these ratings we have the following objective measures: (1) a measure of general intelligence, this being the total score on four tests, called the CAVI score *; (2) a measure of vocabulary, the score on the word knowledge test; (3) no measure of general honesty; but (4) an objective measure of cheating on examinations in terms of the amount of cheating each pupil did. We received these ratings on twenty-one groups or classes in grades five to eight. But when we threw out the "undistributed" ratings (as stated), the number was reduced to fourteen. We had left to work with five fifth-grade groups, 151 pupils; three sixth-grade groups, 87 pupils; four seventh-grade groups, 162 pupils; and two eighth-grade groups, 80 pupils. Total, 480 pupils.

For these fourteen groups we secured the following correlations: (1) Correlations between ratings for general intelligence and our CAVI measure of intelligence run from .10 to .87. The mean of the fourteen correlations is .435. (2) The average correlation between ratings for vocabulary and score on word knowledge test is .423. (3) The average raw correlation between ratings for general honesty and the number of times (c's) each child cheated is + .20,* each child having three "opportunities" † to cheat, one on each of the four tests, one opportunity being repeated. The correlation between ratings for general honesty and the honest behavior on the test is + .232 on opportunity I, + .400 on opportunity II, + .302 on opportunity IV,† and + .316 on opportunities I and II combined. (4) Raw correlations between rating for cheating and number of times each child cheated (c's) run from − .50 * for one teacher to + .63 * for another, with a mean of + .059.* Between rating for cheating and amount of cheating the *r*'s are: on opportunity I, + .055 *; on opportunity II, + .217 *; on opportunity IV, + .250.*

---

* Using Thorndike's material. See Book One, Chapter VII.

It must be remembered that these correlations are unequally affected by two kinds of errors, first, errors due to broad categories and, second, chance errors. The first type of error we tried to eliminate at the outset by selecting the ratings of those teachers who used a wide range on the scale. The scales all have eleven steps, enough to eliminate the broad categories error, but in the case of the ratings for honesty and cheating the teachers tended to use only the upper half of the scale. The percentage distribution in Table XCII shows that in the case of intelligence 32% are rated above 5 on the scale; word knowledge, 32%; honesty, 73%; cheating, 72%. The median rating for intelligence and word knowledge is at step 5; the median rating for honesty and for cheating at 8.

This skewing of the honesty ratings is due chiefly, no doubt, to the scales for rating honesty, which are constructed on a different principle from that used in the other two scales. To say that a pupil is honest about half the time is not equivalent to saying he is about average for his group. The extremes of the two types of scale, however, are more nearly equivalent.

---

* Since the higher ratings mean greater honesty, the *r*'s with number of c's of course appear *negative* when showing *agreement* with ratings. The signs of such *r*'s are arbitrarily reversed so that agreement will appear as a positive correlation.

† Opportunities I and II were for cheating in the classroom; opportunity IV, for cheating in home work.

TABLE XCII

Percentage Distribution of Ratings

Scale	Intelligence	Word Knowledge	Honesty	Cheating
10	0.7%	0.0%	8.6%	3.7%
9	3.0	4.0	21.4	26.0
8	9.6	7.2	21.6	19.5
7	9.2	8.5	15.3	16.3
6	9.4	12.3	6.1	6.2
5	27.2	23.0	14.7	10.0
4	19.7	19.0	5.2	6.4
3	10.7	12.3	2.5	3.0
2	6.2	12.3	2.9	2.5
1	2.1	1.1	0.8	2.5
0	2.1	0.2	0.6	3.4

The differences in these distributions will account for part of, but not all, the differences in correlations between the ratings and the tests.*

In this school each teacher rated each pupil only once on these four scales. We have no other ratings. Hence we cannot determine their reliability. We have a measure of reliability of ratings for honesty in school C, which we have reported as .69. Should we assume this to hold here also, we are in a position to correct these correlations for attenuation.

The correlations between ratings for honesty and the classroom honesty are .35, .386, and .316 respectively for three schools.

---

* Unfortunately there is no satisfactory way of correcting these r's for the differences in distributions or for broad categories. In the case of rating, discrete indexes are used for correlations, and the steps are unequal as far as we know. If they were equal or could be assumed equal, then Sheppard's correction for broad categories would apply. But if we assume that true ratings of character facts are distributed normally, then an inspection of Table XCII will convince us that these class intervals are unequal in size. Hence about all we can say is that the correlations between ratings of cheating and honesty are lower than the true correlations because of this error of coarse grouping and unequal steps.

The average is .35. With .87 as the reliability of the cheating tests, this average of .35, when corrected for attenuation, is raised to .427.

It would be unsafe even to guess at the reliability of the ratings for intelligence, cheating, and word knowledge. However, in the case of general intelligence and vocabulary, the correlations corrected for attenuation would not be much higher than the raw *r*'s, owing to the high reliability of the tests, unless of course the ratings should be extremely unreliable. If these ratings have a reliability as high as .70, then the *r* between ratings for intelligence and the test would run up a little over .50. The same is true of the word knowedge test.

D. Conclusions

Our general conclusion is therefore that, when cleared of chance errors and errors due to coarse grouping, the correlation between our measure of classroom honesty and a rating for general honesty will be around .40 and the correlation between rating for general intelligence and a reliable measure of intelligence will be .50 or better.

A rather curious result is the fact that the ratings for *general honesty* correlate higher with our tests of classroom honesty than do the ratings for classroom cheating. The raw *r* between all combined measures of classroom honesty and honesty ratings is + .316, but the *r* with cheating ratings is + .10. One cause of this may be the fact that the honesty ratings are more valid. The teacher's knowledge of the general honesty of a pupil is based perhaps on a great many different kinds of observations and experiences, whereas her knowledge of his classroom cheating is based entirely on whether or not she ever happened to catch him at it or whether she has heard of his cheating elsewhere.

When we compare the ratings of a specific intellectual ability such as word knowledge with a specific form of conduct such as cheating on a classroom examination, we are of the opinion that the former can be rated more accurately than the latter. If we assume a reliability of the cheating ratings as low as .50, the correlation with the honesty scores rises to only + .22. On the other hand, the r between ratings for vocabulary and the word knowledge test is over .50 when corrected for attenuation. This conclusion seems rather strange in view of the fact that ratings for classroom honesty correlate .820 with ratings for general honesty, and that ratings for vocabulary correlate .75 with ratings for general intelligence.

THEORETICAL VALIDITY

In the discussion in Book One, Chapter V, on theoretical validity, it was pointed out (1) that these performance tests of deception are in fact measured samples of conduct and are *ipso facto* valid as measures of the particular behavior in the particular type of situation embodied in the test; (2) that the theoretical criterion consists of a summary of a very large number of such measured samples; (3) that the process of validation consists in securing enough random samples of the behavior in question so that the sum of the scores of the samples will correlate at least .90 with the theoretical criterion; and (4) that, when deceptive behavior for practical purposes is subdivided into types, such as lying, stealing, or cheating, or when any fairly homogeneous unit of behavior is taken, such as copying-from-key or opening-the-eyes-when-they-are-supposed-to-remain-closed, then a very large sample of each of these types or each of these units will constitute the hypothetical criterion for it. Further, any one test situation may be a highly valid measure of its specific type and have low validity as a measure of the larger whole.

Granting these propositions, the ideal way to build conduct tests would be first to list all the possible types of responses to the situations making up the unit with which we wish to deal. If the unit is deception, then we should begin by listing all sorts of deceptive responses in a very large number of life situations. The next step would be to take a random sample of the specific situations and measure the pupil's responses to them.

For illustration, let us take 1000 measures representing ten types of situation and regard these as a criterion. The very best we can do with any test which might be substituted for such a criterion, that is, which will have a high correlation with it, is to make up a test containing measures from each of the ten situations represented in the criterion. If these measures were absolutely reliable, such a selection would correlate + 1.00 with the criterion, as the deviates from the mean on the abbreviated test would, when divided by the SD of their distribution, equal the deviates from the mean on the longer test when they are divided by their own SD. But such measures do not have a reliability of 1.00. Hence the score of an individual will vary around some hypothetical true score in a succession of samples such as the one proposed for our test. This variation is of course a function of the reliability of the procedure and is measured by the intercorrelations among the measures of any one type of response.

These concepts of reliability and validity may be expressed statistically by the following formulas. In all cases it is to be noted that a series of measures,

$$a, b, c, \ldots n,$$

is being compared with another series of measures,

$$a, b, c, d, e, f, g, \ldots n,$$

in whole or in part; also that each series may be either finite or infinite. If finite, the series is an approximation to a true measure which theoretically would be obtained from an infinite extension of the series with a reliability greater than zero.

1. The formula (Spearman-Brown) expressing reliability as measured by the predicted correlation of two series of the same length, where T = the number of tests, is:

$$r_{(a_1 + b_1 + c_1 \cdots n_1)(a_2 + b_2 + c_2 \cdots n_2)} = \frac{\mathrm{T}r}{1 + (\mathrm{T} - 1)r}$$

Formula (8)

2. The same formula, when referring to the comparison of two infinite series, of course becomes:

$$r = 1$$

Formula (9)

3. The formula expressing validity as determined by the correlation of two finite series of unequal lengths (as when one set of measures is validated by correlation with a longer set previously secured) is as follows when the shorter series is included in the longer:

$$r_{(a+b+c\cdots n)(\cdots c+d+e\cdots n)} = \frac{\mathrm{T}+(\mathrm{N}-1)r\mathrm{T}}{\sqrt{\mathrm{T}+(\mathrm{T}-1)r\mathrm{T}}\sqrt{\mathrm{N}+(\mathrm{N}-1)r\mathrm{N}}}$$

Formula (10)

4. When the shorter series is not included in the longer, formula (10) becomes:

$$r_{(a+b+c\cdots n)(s+t+u\cdots n)} = \frac{\mathrm{NT}r}{\sqrt{\mathrm{T}+(\mathrm{T}-1)r\mathrm{T}}\sqrt{\mathrm{N}+(\mathrm{N}-1)r\mathrm{N}}}$$

Formula (11)

5. The formula expressing validity as determined by the correlation of two series one of which is finite and one infinite (available for the theoretical validation of a criterion for which there is no empirically superior measure) is:

$$r_{(a+b+c\cdots n)(s+t+u\cdots\infty)} = \sqrt{\frac{\mathrm{T}r}{1+(\mathrm{T}-1)r}}$$

Formula (12)

In these formulas,

T = the number of measured responses or tests

N = the total number of measures required to measure the behavior

r = the average inter-r between the measured tests

Formula (10) assumes that the average inter-r of the N behaviors is the same as the average of the T that have been measured. Of course, if for any reason it seems best not to assume this, then r may be given any assigned value that appears best to fit the facts. It is not necessary to assume the same r for the three times it appears in the formula. The r in the numerator represents the average correlations between each T and each N. The r in the left-hand member of the denominator is the average inter-r of the T's and is always known. The other r in the denominator is the average inter-r of the N's.

If N in Formula (10) is infinite, then the formula changes to:

$$r_{(a+b+c\cdots n)(s+t+u\cdots\infty)} = \frac{r\mathrm{T}}{\sqrt{\mathrm{T}+r\mathrm{T}(\mathrm{T}-1)}\sqrt{r}},$$

which reduces to:

$$\sqrt{\frac{r\mathrm{T}}{1+(\mathrm{T}-1)r}}$$

Formula (13)

This will be recognized as the square root of formula (8), the Spearman-Brown formula for predicting reliability coefficients. The difference is due to the fact that the Spearman-Brown formula gives the predicted *r* of one series of tests with another comparable series of the same length, whereas formula (13) gives the correlation of a sample with an infinite series. The radical indicates that as *r* approaches 1 the significance of T grows less and less until, when *r* equals 1, the formulas are identical and the distinction between validity and reliability disappears.

As a matter of fact, the usual test which is to be validated by a criterion is not made by taking samples from every type of conduct found in the criterion, but consists rather of items from only one or a few of the total number of the types. Indeed, there is likely to be considerable irregularity in the make-up of the test. In cases like this, the reliabilities as measured by the intercorrelations run lower per size of sample in proportion as the situations differ from one another and these differences enter into the determination of the responses. Consequently, to measure a certain type of behavior by a test made up in this second way requires, for the same degree of validity, a larger number of measures than would be needed in a test made up in the first way. But a large number of measures of this sort, that is, of measures secured in a variety of situations, is for performance tests a highly impractical matter.

The types of deception or dishonesty that we have attempted to measure are listed in Table XCIII.

The validities of these tests may be considered progressively.

1. How well is each specific type of conduct measured by the tests of it? For example, how well do the three IER tests measure

TABLE XCIII

VALIDITIES OF TECHNIQUES USED FOR MEASURING DECEPTION

TYPE OF DECEPTION	RELIABILITY	VALIDITY
I. The classroom type of cheating		
A. Copying from a key, IER tests (3 tests)	.871	.93
B. Adding more scores after time is called, Speed (6 tests)	.825	.91
C. Peeping (3 tests)	.721	.84
D. Faking the solution to a puzzle (3 tests)	.750	.87
II. The out-of-classroom types of cheating		
E. On home work (1 test)	.240	.49
F. On athletic contests, faking a record (4 tests)	.772	.88
G. In parties; faking, peeping, stealing (3 tests)	Not known	
III. The stealing type of dishonesty		
H. Taking money from a box used in a test	Not known	
IV. The lying type of deception		
I. Lying about conduct in general (SA)	.836	.92
J. Lying about cheating on the IER tests	Not known	

the copying-from-key type of dishonesty? This question is answered by the correlations given under "Validity" in Table XCIII. The reliabilities given are the same as in Table LXXXVII of Chapter V, and the validity is the square root of the reliability, as we have just seen.

The reliabilities state the correlation of the number of tests in each case with an equal number of similar tests; the validities state the correlation with an infinite number of similar tests. Thus in conduct A, the three IER tests correlate .927 with an infinite series of similar tests.

2. How well is each general type of dishonesty or deception measured by the samples taken of it? How well, for example, is classroom deception represented by or measured by behaviors A, B, C, D?

3. How well is dishonesty in general measured or represented by all the tests under I, II, III, and IV of Table XCIII?

The answers to questions 2 and 3 are based on the intercorrelations between the behaviors measured. The basic formulas are the same as those used in answering question 1. We have measured four types of classroom cheating. We want to know how well these correlate, first, with four more similar types and, second, with an infinite series of similar types.

Table XCIV gives the intercorrelations of the types of behavior listed as A, B, C, D, E, F, G, H, I.

TABLE XCIV

INTERCORRELATIONS OF NINE TYPES OF DECEPTIVE BEHAVIOR

	B	C	D	E	F	G	H	I
A	.450± .02	.400± .03	.400± .03	.172± .02	.288± .03	.118± .09	.143± .08	.350± .02
B		.374± .03	.425± .02	.193± .02	.345± .02	.169± .08	.173± .08	.248± .02
C			.300± .04	.234± .02	.100± .04	.250± .04	.200± .08	.108± .07
D				*	.300± .03	.122± .11	.346± .07	.256± .06
E					.142± .04	– .015± .05	– .010± .06	.400± .03
F						.118± .08	.283± .09	.230± .03
G							.210± .09	– .004± .04
H								.132± .04

* Data not available.

First, we shall try to answer question 2. Take classroom deception as a significant type of dishonesty. How well is it measured by tests of conduct A, B, C, and D? We find first the average of the inter-r's of A, B, C, and D, which is .392. Applying formula (8), page 119, we find that these tests have a reliability of .721, which means that, if we had four other similar behaviors tested, the correlation between the two sets (four each) would be .721. The validity of these four measured behaviors — formula (13) — as representative of an infinite number of such behaviors is .849, which means that, if we had a very large number of similar types of conduct tested, the correlation between the four present types and a very large number (the theoretical true measure) would be .849.*

Conducts E, F, and G are out-of-class types. We could apply the same formulas here, but two samples are not enough to make it worth while.

We pass then immediately to question 3, namely, how well is dishonesty in general measured by all the behaviors tested (A to I)?

---

* All this is based on the assumption that the average inter-r among the infinite number of such types of conduct will remain the same as the figure here obtained. Whether it will or not depends on the degree to which these four types of dishonesty are representative samples of all types that might be exhibited in the classroom. As we have already pointed out, the types of conduct measured were selected not at random from a larger number, but according to accessibility and ease of measurement. We have measured the types that we found we could measure. On the other hand, it is probably true that the number of similar types of conduct is by no means infinite. In addition to the four ways tested, a child may practice deception in the classroom by doing such things as copying from another child, handing in another's work, changing his marks on his grade card, forging his parent's signature to excuses; but a dozen or so of such acts will exhaust the list for the average child's school experience.

When we consider the out-of-class experiences, the case is quite different. The types of dishonest conduct run into large numbers. Here we are much less likely to have a random sample. Indeed the sample is so small that it is not worth while to make any predictions.

Consider then the question of the adequacy of behaviors A to I as representative of the child's total experience. In the first place, the greater part of dishonesty is either cheating, lying, or stealing, perhaps more lying than anything else. What really ought to be done is, first, to collect a list of situations in which deceptive behavior is more frequently practiced and then to build tests around these in the same manner as the Ayres Spelling Scale is built and the Thorndike Word-Knowledge Test.

The average inter-r of the entire nine types is .227. Substituting this figure in the Spearman-Brown formula, we get a predicted reliability of .725, the square root of which gives a predicted validity of .851. To repeat, this simply means that, if we had nine more similar tests (and by "similar" we mean such as would yield the same average inter-r), the correlation between the measured nine and the unmeasured nine would be .725. Also if we had an infinite number of similar types measured, the correlation between the nine we have and this infinite number (the theoretical true measure of dishonesty) would be .851.

Are these validities high enough to be useful for prediction? From any given child's score can we make anything like a reasonably certain prediction concerning his future behavior? It is generally felt among students in this field that, before useful predictions may be made, the correlation between the variable to be predicted and the known variable should be .90 or higher. If we had measures of enough types of deceptive behavior to give a reliability of .90, then, according to the present concept, the validity would be the square root of .90 or .9486. The question is then, how many types of behavior must we measure before we reach this goal? This depends on the average inter-r among the measured types and on the assumption that the average inter-r of an infinite number would be the same.* If the average inter-r is .10, we should need eighty-one types to get a reliability of .90 and a validity of .948. But if the average inter-r is as high as .40, it would require but fourteen such measures to reach the goal of .90 reliability and .948 validity. Applying this method to the present data, we find that we should need fourteen measures of the classroom types of deception to get the desired results, since their inter-r is .395, and thirty-one measures of such miscellaneous types of deception as we have used to get a measure of more general dishonesty with a reliability of .90 and a validity of .948. The fol-

---

* The formula, derived from formula (8), where $T = N$, is

$$N = \frac{R(1 - r)}{r(1 - R)}, \qquad \text{Formula (14)}$$

in which r is the average inter-r and R the desired reliability.

lowing table is based on an average inter-r of .227 and shows how many similar measures we should need to get any given reliability and validity.

TABLE XCV

Variation of Reliabilities and Validities with Variation of Number of Tests, Where the Average Inter-r = .227

N	r	$\sqrt{r}$
31	.90	.95
28	.89	.94
25	.88	.94
23	.87	.93
21	.86	.93
19	.85	.92
18	.84	.92
17	.83	.91
16	.82	.91
15	.81	.90
14	.80	.89
13	.79	.89
12	.78	.88
11	.77	.88
11	.76	.87
10	.75	.87

It is clear now that, if we had thirty-one types of dishonesty reliably measured and if the average inter-r among them was .227, they would correlate with an infinite number of similar measures .948, which is high enough for useful prediction. The next step in the process is this: If one variable correlates as high as .948 with another, the two are almost identical and can for practical purposes be interchanged. That is, one may be predicted from the other with a high degree of certainty if the SD's are similar.

Suppose that, instead of setting up this ideally perfect criterion composed of an infinite number of types of conduct, we take a little less perfect criterion, say, one of thirty-one measures, which we have seen will correlate very highly with the perfect one. How well will the sum of our nine measured types correlate with this slightly imperfect criterion? Substituting 9 for T and 31 for N in formula (11) on page 120, we get .809.

Thus the fewer the measures contained in the criterion, the less perfect it becomes and the lower the correlations of the experimental tests with it. The limit, of course, is reached when the criterion contains the same number of samples as the test. Then the correlation is the same as the reliability coefficient. The table below shows how this works out with the present data.

TABLE XCVI

VARIATION OF VALIDITIES WITH VARIATION OF NUMBER OF TESTS, WHERE THE CRITERION CONTAINS 31 MEASURES AND THE AVERAGE INTER-r = .227

NUMBER OF TESTS	NUMBER IN THE CRITERION	r	NUMBER OF TESTS	NUMBER IN THE CRITERION	r	NUMBER OF TESTS	NUMBER IN THE CRITERION	r
9	31	.809	16	31	.862	24	31	.888
10	31	.820	17	31	.866	25	31	.890
11	31	.829	18	31	.870	26	31	.892
12	31	.838	19	31	.874	27	31	.895
13	31	.845	20	31	.877	28	31	.896
14	31	.851	21	31	.880	29	31	.898
15	31	.857	22	31	.883	30	31	.900
			23	31	.886	31	31	.901

Thus if we assume a criterion composed of thirty-one types of deception and if the average inter-r's of these is .227, our nine would correlate .809 with it, ten would correlate .820, and thirty-one would correlate .90 with it.

THE VALIDATION OF SEPARATE TESTS

So far we have been trying to settle the question as to how well we have measured (1) classroom dishonesty with the four types of tests used and (2) dishonesty in general with the nine types used. We have used as a criterion an infinite number or a number large enough to correlate .95 with an infinite number of similar types. It remains now to determine the relative validities of the separate tests as measures of dishonesty.

In this we shall use a practical criterion rather than a theoretical one. The general criterion will be the total number of times each child cheated on all the separate tests he took. It will be recalled that there were, in all, in addition to the seven duplicating tests used for a special purpose, fifteen classroom cheating tests, seven out-of-class cheating tests, two stealing tests, and two lying tests. The validity of the criterion will vary according to the number of tests taken by the group in question.* As far as possible we have used for this purpose only the groups tested by at least part of the tests of types A to G. Thus the validity of the criterion will not vary much from .80. This is imperfect, to be sure, but it is the best we have. Correlation with it will show the *relative* validities of these techniques. For the validation of each of types A, B, C, and D we have used, in addition to the general criterion already stated, the sum of these four classroom tests as a more specific criterion. It should be remembered that as a measure of classroom dishonesty this technique has a rather high validity.

The three groups used in this procedure are from schools C, D, and R. The general results of the tests given are reported in Chapter IV. School D had, in all, twenty-seven tests; school C had twenty-three tests; and school R had classroom cheating tests only, but thirteen of these. The sum of the thirteen is used as the criterion in this case. The major facts about these are given in

---

* It should be remembered that the criteria under discussion are composed not of the amount scores, but the fact scores. Hence their validity is not quite that found a little while ago, which is based on the inter-*r*'s of the amount scores. In a certain logical sense the fact score is much more valid than the amount score, in that the amount score contains other things besides falsification, as we have repeatedly pointed out. The only difficulty with the fact score is that it is so placed that on many of the tests there is no doubt very much dishonesty which is recorded in the fact score as honesty. We deliberately set the limits so that this would be the case, and we did it in order to give the benefit of the doubt to the pupil. Hence if a pupil got a "c" on a test, the chances are practically certain that he cheated; but if he got a zero score, the chances are by no means certain that he did not cheat. The "c" scores are valid, but the "0" scores are not. Or a more correct statement would be, if a pupil took twenty tests and the records show that he cheated ten times, we may be sure that he cheated at least that and maybe more.

Tables XCVII, XCVIII, and XCIX, the columns of which have the following meanings:

Column 1 is the percentage of pupils who cheated.

Column 2 is the mean of the raw amount score, not Xi. For units in which these are measured see Book One, Chapter III.

Column 3 is the SD of the amount score on each test.

Column 4 is the raw correlation between each amount score and the criterion composed of the number of times each pupil cheated in a *classroom* test.

Column 5 is the corrected *r*'s of column 4. The correction in each case is made either for restricted range due to a piling up of zeros on tests where there was little cheating, or errors of measurement involved in the materials used (errors of type I).

Column 6 is the correlation with a criterion composed of the number of times each pupil cheated in *all* deception tests combined.

Column 7 is the corrected *r*'s of column 6.

Most of these correlations in Tables XCVII, XCVIII, and XCIX are in error to a slight degree because in each case the fact score of the test itself is included in the criterion. The spurious factor, however, is not so great as it would be if the criterion were an amount score. In a few cases we have extracted from the criterion the fact score of the test that is being correlated and find that it makes very little difference for single tests whether its score is in or out. But when we deal with a group of tests, such as the IER group or the Speed group, we find that it is necessary to take the test scores out of the criterion. Otherwise the correlation is too high. These more accurate *r*'s are given in parentheses.

Commenting on these tables we may say that, if our separate tests are analogous to elements of intelligence tests, they all have satisfactory validity.

TABLE XCVII

Data for Validation of Separate Deception Tests, Group I, School D — Total N, 270

Deception Tests	1 % C's	2 Mean Amount	3 SD Amount	4* r Raw with CT	5* r Corrected with CT	6 r Raw with CC	7 r Corrected with CC
A. Copying tests — Duplicating technique							
1. Information test IER	2						
2. Disarranged Sentences	17	1.03	0.60	.250	.730		
3. Thorndike-McCall Reading	44	1.77	2.60	.264	.624		
4. Language Completions IER	52	6.76	5.74	.300	.649		
5. Word Knowledge IER	59	10.00	10.00	.314	.656		
6. Arithmetic IER	70	6.86	5.64	.392	.494		
7. Spelling	74	11.85	9.40	.390	.643		
All together	80			.676 (.520)	.895 (.705)	.702	.702
B. Adding on scores — Speed tests							
1. Additions	41	13.5	13.0	.417	.485		
2. Cancellation of A's	34	7.9	6.9	.475	.539		
3. Digit Symbols	47	20.0	13.1	.470	.534		
4. Dots	66	80.7	65.0	.459	.481		
5. Cancellation of 4's	71	17.9	13.1	.370	.393		
6. Cancellation of 2's and 3's	80	11.4	7.0	.452	.501		
All together	92			.687 (.510)	.755 (.650)	.614	.736
C. Peeping tests							
1. Squares	27	5.0	6.76	.477	.528		
2. Circles	88	26.0	13.20	.515	.566		
3. Mazes	62	24.1	22.00	.515	.568		
All together	90			.600 (.480)	.630 (.520)	.543	.625

* The figures in parentheses show the validity *r*'s when the particular tests concerned are not included in the criterion. Cf. formulas (3) and (4) above.

TABLE XCVII — *Continued*

Deception Tests	1	2	3	4*	5*	6	7
	% C's	Mean Amount	SD Amount	r Raw with CT	r Corrected with CT	r Raw with CC	r Corrected with CC
D. Puzzle tests — Faking							
1. Puzzle Peg	38	4.5	3.4	.361	.415		
2. Fifteen Puzzle	28	4.0	4.2	.534	.604		
3. Weight arrangement	41	6.1	3.6	.290	.333		
All together	57			.570 (.435)	.610 (.512)	.629	.678
F. Athletic contests							
1. Hand dynamometer	19	2 Kl.					
2. Spirometer	26	20 cu. in.					
3. Chinning (pull-up)	12	1 time					
4. Broad jump	23	4 in.					
All together	59			.205	.230	.392	.431
G. Parties							
1. Peeping	31						
2. Bean Relay	20						
3. Mystery Man	5						
All together	44			.110		.350	.350
H. Money test	10			.250			

* The figures in parentheses show the validity r's when the particular tests concerned are not included in the criterion. Cf. formulas (3) and (4) above.

TABLE XCVIII

DATA FOR VALIDATION OF SEPARATE DECEPTION TESTS, GROUP II, SCHOOL C — TOTAL N, 160–285

Deception Tests	1	2	3	4	5	6	7
	% C's	Mean Amount	SD Amount	r Raw CT	r Corrected CT	r Raw CC	r Corrected CC
A. Copying — Double-testing technique							
(1925)	59			.615	.676	.571	.628
(1926)	76*						
B. Adding on scores — Speed tests	44			.623	.685	.611	.672
C. Peeping tests Squares	33			.482		.502	
D. Puzzles Weight arrangement	18	4.3	3.0	.438		.558	
F. Athletic contests							
1. Dynamometer	16	2 Kl.					
2. Spirometer	20	18 cu. in.					
3. Pull-up	6	1 time					
4. Broad jump	11	3 in.					
All together . . .	38			.158	.171	.393	.459
G. Parties							
1. Peeping	26						
2. Bean Relay	27						
3. Mystery Man	11						
All together	47			.206		.559	
H. Money test Magic Squares	9	10¢		.132		.487	

* The second test did not include the rooms containing pupils of superior intelligence. The per cent for this second group was approximately the same for the first test as for the second.

TABLE XCIX

Data for Validation of Separate Deception Tests, Group III, School R — Total N, 170

Deception Tests	1	2	3	4	5
	% C's	Mean Amount	SD Amount	r Raw CT	r Corrected CT
A. Copying — Double-testing technique					
1. Arithmetic IER	17	6.00	6.48	.419	.492
2. Information IER	2	8.50	3.49	.502	.312
3. Word Knowledge IER	7	12.50	14.80	.317	.390
All together	29			.579	.654
B. Adding on scores — Speed tests					
1. Additions	12	10.6	8.10	.500	.600
2. Number Checking	1	3.5	1.43	.014	.014
3. Cancellation of A's	6	5.5	6.81	.610	.620
4. Digit Symbols	9	15.2	7.00	.494	.500
5. Dots	12	42.0	31.50	.370	.478
6. Cancellation of 4's	4	5.5	5.55	.233	.250
All together	26			.567	.705
D. Puzzle tests					
1. Puzzle Peg	23	3.60	2.69	.496	.546
2. Fifteen Puzzle	16	3.00	3.75	.627	.658
3. Weight arrangement	15	4.14	2.85	.468	.516
All together	40			.646	.670
H. Money test					
Magic Squares	13	14½¢		.385*	

* 16 out of 22 of those whose boxes were short of money also showed at least one "c" on the tests.

CHAPTER VIII

THE RELATIONS OF INTELLIGENCE, AGE, AND SCHOOL STATUS TO DECEPTION

The question of the relations of intelligence, age, and school status to deception is actually far more complex than might appear from the discussion in Chapters VII and XII of Book One. These more difficult aspects of the problem we shall take up in this chapter.

THE RELATION OF INTELLIGENCE TO DECEPTION

When speaking of intelligence it is important to distinguish between (1) intelligence test score, or points achieved on the test, (2) mental age, or average test score of an unselected group of a given chronological age, (3) intelligence quotient, or the ratio of mental age to chronological age, and (4) the deviation of the test score from the average of the age group to which the child belongs, divided by the standard deviation of that group. As a method of indicating intellect, (4) is statistically preferable to (3) because $\frac{X - Mx}{\sigma x}$ and $\frac{Y - My}{\sigma y}$ are comparable measures,* while $\frac{X}{Mx}$ and $\frac{Y}{My}$, which are intelligence quotients, are not.

In correlating the scores of one intelligence test with those of another, Thomson and Pintner † have shown that the correct determination is the partial correlation between either mental ages or gross scores with age constant, as correlations between IQ's may be spurious. Similarly, in correlating intelligence with another variable, the correct determination is the partial between gross score and the variable, or mental age and the variable, with age constant. If IQ's are used, age should be partialed out, unless it is shown that the correlation between age and IQ is zero, as it theoretically is. In all but the Speed tests, Parties, and stealing tests we have correlated gross intelligence scores or mental ages with deception and partialed out age.*

---

* See Kelley, Truman L., *Statistical Method*, Chapter VI.

† Thomson, G. H., and Pintner, R., "Spurious Correlations and Relations between Tests," *Journal of Educational Psychology*, Volume XV, pp. 433–444, October, 1924.

The two main statistical problems involved in this section are the usual ones of *selection* and *errors*. Selection has been handled by combining populations, whenever possible, in such a way as to yield normal distributions of intellects.†

The problem of errors has been handled by making corrections for them, using the correction formulas discussed in Chapter VI.

A. The Correlation between Cheating on the IER School Tests and Intelligence

This type of deception has been correlated with two kinds of intelligence test scores, the CAVI scores and Binet mental ages. The facts are given in Tables C and CI.

In Tables C and CI the " raw r's " are between the raw difference scores and intelligence test scores. The columns headed

---

* This procedure will not, except by chance, give the same result as the correlations between deception and IQ. The partial correlation between cheating and intelligence, with age constant, is given by the familiar formula

$$r_{\mathrm{CI.A}} = \frac{r_{\mathrm{CI}} - r_{\mathrm{CA}} \cdot r_{\mathrm{AI}}}{\sqrt{1 - r^2_{\mathrm{CA}}}\,\sqrt{1 - r^2_{\mathrm{AI}}}}.$$

But the correlation between cheating and IQ is given by

$$r_{\mathrm{C}\frac{(\mathrm{MA})}{(\mathrm{CA})}} = \frac{r_{\mathrm{C(MA)}} \cdot v_{\mathrm{(MA)}} - r_{\mathrm{C(CA)}} \cdot v_{\mathrm{(CA)}}}{\sqrt{v^2_{\mathrm{(MA)}} + v^2_{\mathrm{(CA)}} - 2\,r_{\mathrm{(CA)(MA)}} \cdot v_{\mathrm{(MA)}} \cdot v_{\mathrm{(CA)}}}}, \quad \text{Formula (15)}$$

$$\text{where } v_{\mathrm{(MA)}} = \frac{\sigma_{\mathrm{(MA)}}}{\mathrm{Mean}_{\mathrm{(MA)}}} \text{ and } v_{\mathrm{(CA)}} = \frac{\sigma_{\mathrm{(CA)}}}{\mathrm{Mean}_{\mathrm{(CA)}}}.$$

† That intellects are distributed normally in an unselected population is proved in Thorndike's *Measurement of Intelligence.*

"Corrected *r*" give these *r*'s corrected for errors of type I and represent the correlations between cheating (devoid of errors of type I) and intelligence test scores or mental age.

TABLE C

CORRELATIONS BETWEEN CAVI SCORES AND IER SCHOOL Xi'S

POPULATION	N	RAW *r*	CORRECTED *r*	σ_{xi}
A	710	— .424	— .474	5.0
B	814	— .169	— .216	4.8
C	578	— .320	— .364	5.8
P	232	— .043	— .101	3.5
Q	153	— .140	— .230	3.1
S	157	— .120	— .254	2.5
ABC	2102	— .339	— .388	5.5
PQS	542	— .160	— .245	3.3
ABCPQS	2644	— .350	— .398	5.6

TABLE CI

CORRELATIONS BETWEEN MENTAL AGES AND IER SCHOOL Xi'S

POPULATION	N	RAW *r*	CORRECTED *r*	σ_{xi}	INTELLIGENCE TEST
C	214	— .403	— .441	6.2	National
K	127	— .223	— .238	5.8	Binet
P	197	— .053	— .062	3.7	Binet
Q	132	— .200	— .248	2.9	Binet
CKPQ	670	— .400	— .432	6.2	

These tables illustrate the variations in correlation with different populations. It will be noted that the higher correlations are associated with the larger cheating SD's, the CAVI and the MA SD's remaining about the same. This illustrates the influence of restricted range on correlations.

In an effort to determine the true correlation between each type of deception and intelligence test scores, we have combined populations. In Table C, A, B, and C are public school populations, and P, Q, and S are private school populations. The higher r's in the public school populations are due in part, no doubt, to the wider range of cheating scores, as shown by the respective SD's of 5.5 and 3.3. Finally all populations, totaling 2644 cases, are thrown together, yielding a corrected r with this type of cheating of − .398.

Table CI shows that the correlation between IER school Xi and mental age as measured by the National Intelligence Test in population C and by the Stanford Binet in populations K, P, and Q, when corrected for errors of type I, is − .432. This is somewhat higher than the − .398 just reported for the CAVI tests. In fact, the r's of Table CI seem to run higher than in Table C on the same populations. But it should be noted that there are fewer cases in Table CI, and the SD column shows also greater variability than in Table C. The difference in r's is probably only a matter of selection. The larger populations of Table C give the more reliable correlations.

The r's in Table C are between intelligence test scores and deception. To find the relation between *intelligence* and deception, age must be kept constant. Partialing out age in Table C, we get the following partial r's: for populations ABC, − .426; PQS, − .433; and ABCPQS, − .493. Our conclusion is that the correlation between intelligence and cheating on the IER classroom tests, when all ranges of cheating are represented, will be about − .50.*

B. THE CORRELATION BETWEEN CHEATING ON THE IER HOME TEST AND INTELLIGENCE

The main facts are given in Table CII. As these tests were given to all public school and private school populations under the same general conditions, we report the facts for all schools as well as for the separate populations.

---

* A check on this was found in population D, where the duplicating technique was used, eliminating at the outset all errors of type I. Here the correlation between Binet mental age and the number of changes made from the key while self-scoring the papers is − .232. The partial correlation with age constant goes up to − .478 on account of the high positive r in this population between cheating and age.

TABLE CII

CORRELATIONS BETWEEN CAVI SCORES AND IER HOME XI'S

POPULATION	N	RAW r	CORRECTED r	σ_{xi}
A	605	− .273	− .319	3.0
B	807	− .196	− .218	2.9
C	599	− .202	− .225	2.8
P	229	− .264	− .309	1.9
Q	143	− .250	− .327	1.6
S	130	− .230	− .309	1.5
ABC	2011	− .222	− .246	2.85
PQS	502	− .265	− .328	1.88
ABCPQS	2513	− .248	− .280	2.58

It is curious that in Tables C and CI the private school correlations are lower than the public, but here they are higher. This may be due to the fact that the private school children came mostly from homes where help was available and so had equal opportunities to cheat, whereas many of the public school children came from the lower social levels, where the homes offered fewer opportunities for securing help on the test.

The partial correlation of − .255 for all populations between home tests and intelligence test score, with age constant, appears much lower than the − .493 for the school tests. But there were three school tests having a reliability of .87 and one home test with a reliability of .25. If correction for errors of type II were made, the home test would correlate as high as, if not higher than, the school tests.

C. THE CORRELATION BETWEEN CHEATING ON THE SPEED TESTS AND INTELLIGENCE

In the section of this chapter on cheating and age, we shall see that the raw Speed deception scores are positively correlated with age because the "honest" D_2's of the standard population correlated .281 with age, and because both age and cheating on the Speed tests are correlated with the abilities represented by the scores on the first two trials of the Speed tests. The correlations of the deceptive Speed D_2's (trial 2 minus trial 3, trial 3 being self-scored) are influenced by these factors. The correct procedure is first to correct the raw correlations for errors of type I and then to partial out both age and speed ability. But the raw correlations between Speed cheating and intelligence test scores are all very near zero to begin with *; and since errors loom large, we feel that the second order partials would be very unreliable.

Under these rather unusual circumstances we have used IQ's as measures of intellect, correlated these with Speed difference scores, and corrected for errors of type I. We shall assume that IQ's are uncorrelated with age, with speed ability, and with the "honest" D_2's of the standard population.† IQ's were available on four populations. The results are given in Table CIII.

TABLE CIII

CORRELATIONS BETWEEN IQ'S AND SPEED XI'S

POPULATION	N	r_{CIQ}	CORRECTED r	σ_{Xi}	σ_{IQ}	MEAN Xi	MEAN IQ	INTELLIGENCE TEST
C	353	$-.321$	$-.385$	2.4	18.3	-1.5	106	National Scale A
E	459	$-.356$	$-.410$	2.0	18.7	-1.3	108	Otis Advanced
L and M	325	$-.236$	$-.302$	1.6	19.7	-0.4	111	Multi-mental
D and P	377	$-.396$	$-.469$	2.9	18.2	-3.0	103	Binet
Total	1514	$-.355$	$-.410$	2.5	19.0	-1.6	107	

The consistency of the correlations found in the four populations on which we have IQ scores increases our confidence in the net result. Also the final correlation of $-.410$ is comparable with what we found in case of the IER school tests.

---

* On account of the high positive r between age and Speed deception.

† We have found this to be true in one population.

D. The Correlation between Cheating on the Coördination Tests and Intelligence

These tests were given in their final form in populations E, F–J, and L–M. In population F–J the Coördination distributions are enormously skewed owing to the large amount of cheating. Indeed they are almost J-shaped. This population has therefore been omitted from these determinations. The facts for populations E and L–M, where the distributions are also somewhat skewed, are given in Table CIV.

TABLE CIV

Correlations between Mental Ages and Coördination Xi's

Population	N	r_{CMA}	Corrected r	σ_{Xi}	σ_{MA}	Mean Xi	Mean MA	Intelligence Test Used
E	518	− .442	− .475	2.8	2.15	− 4.45	13.6	Otis Advanced
L and M	332	− .194	− .206	3.1	1.96	− 5.00	12.0	Multi-mental
Total	850	− .345	− .370	3.0	2.07	− 4.67	13.0	

The partial r, with age constant, is − .445. This again agrees with the Speed and the IER school tests, showing that the correlation between intelligence and these classroom types of deception is between − .40 and − .50.

E. The Correlation between Cheating on the Puzzle Performance Tests and Intelligence

These tests were given in but two populations, D and R. There are 322 cases, and the correlation between raw scores and mental age is − .030, which, when corrected for type I errors, becomes − .040, and with age partialed out is − .183. This low correlation is rather surprising in view of the higher ones with the other types of classroom deception. The IQ correlations which would free us from age complications show no better results. We suspect that we have here another case of correlation between honest ability and intelligence and between honest ability and cheating.

Unfortunately we have not had available the data for determining this. There is every reason to believe that ability to do these puzzles is correlated positively with intelligence. If honest ability is also correlated with the tendency to cheat, as in the case of the Speed tests, then the correlation between cheating and intelligence, with honest ability constant, would run higher and be negative.

F. The Correlation between Intelligence and Cheating on a Combination of Classroom Tests and Intelligence

1. Fact Scores. Certain populations, it will be remembered, had ten or more chances to cheat in the classroom. Fact scores expressed as ratios of cheatings to opportunities are called the CT ratios. The raw correlations between these ratios and mental ages are as follows: for population C, − .165; D, − .236; L–M, − .208; total (863 cases), − .210. The partial r, with age constant, is −.230. This is lower than we should expect, but it may be accounted for on the ground that the " fact " cheating limits are very liberal, there being much cheating that is not included in the fact score. This type of error would tend to reduce the correlations.

2. Amount Scores. We have made a theoretical combination of all classroom Xi or amount scores. Such a combination gives a predicted correlation with intelligence (age partialed out) of − .521. This includes the doubtful case of the Puzzle Performance tests. If these are eliminated, the predicted correlation goes higher. Our feeling is that − .50 is a conservative estimate of the true correlation between cheating on *classroom tests such as these* and intelligence.

G. The Correlation between Cheating on the Athletic Contests and Intelligence

For 497 cases in populations A, C, and D, the correlation between raw difference score and mental age is − .120; with errors of type I out it is − .140; with age out it is − .235.

H. THE CORRELATION BETWEEN CHEATING AT PARTIES AND INTELLIGENCE

The Party tests yielded only a fact score. Dividing each population into two groups, those who cheated and those who did not, we get a biserial r with IQ for population C of − .184 and for population D, − .081. The partial for the two populations, with age constant, is − .100.

I. THE CORRELATION BETWEEN STEALING AND IQ

Since the stealing tests also yielded only a fact score, we ran biserials for the three populations tested. These biserial r's with IQ are for population C, − .433; D, − .132; and R, − .078. In all combined there were 69 cases of stealing out of a total of 557. The biserial r is − .130. The partial, with age constant, is − .138.

J. THE CORRELATION BETWEEN LYING AND INTELLIGENCE

The score on the SA lying test represents an exaggeration of the extent to which one does what is expected of him. The facts are presented in Table CV.

TABLE CV

CORRELATIONS BETWEEN CAVI SCORES AND SCORES ON THE SA LYING TEST

POPULATION	N	r_{LI}	CORRECTED r	σ_{Xi}	σ_I	MEAN Xi	MEAN CAVI	PARTIAL r, AGE CONSTANT
A	293	− .141	− .256	1.20	23.0	− 1.95	90	− .333
D	180	− .123	− .200	1.26	27.4	− 1.65	106	− .399
P	211	− .135	− .278	1.13	27.8	− 1.40	109	− .327
Total	684	− .160	− .268	1.25	27.0	− 1.70	100	− .352

The r_{LI} column represents the r's of the raw scores and intelligence scores; the next column gives these r's corrected for errors of type I. The r of − .352 represents our best effort at determining the correlation between this type of lying and intelligence.

The correlation between lying to escape disapproval and intelligence is hard to determine, partly because we have scores only on those who cheated on the IER tests. These were correlated with intelligence, however, and for population B (297 cases) the correlation is − .144; for population C (354 cases), − .159. The partials, with age constant, are − .151 and − .167 respectively.

K. Summary

The correlations between intelligence and the various forms of deception measured are summarized in Table CVI.

TABLE CVI*

Summary of Correlations between Various Forms of Deception and Intelligence

Test	1 r_{XII}	2 Corrected r (I)	3 Corrected r (II)	4 $r_{CI.A}$	5 N
IER school . .	− .350	− .398	− .443	− .493	2644
IER home . .	− .248	− .280	− .587	− .255	2513
Speed	− .355	− .410	− .465		1137
Coördination .	− .345	− .370	− .446	− .445	850
Puzzle	− .030	− .040	− .052	− .183	322
Athletic Contests	− .120	− .140	− .164	− .235	497
Parties		− .050		− .100	431
Stealing . . .		− .130		− .138	410
Lying	− .160	− .268	− .303	− .340	684

* Column 1 contains the raw r's.

Column 2 contains raw r's corrected for errors of type I by formulas (5), (6), or (7).

Column 3 contains r's of column 2 corrected for attenuation.

Column 4 contains the partial r's between deception and intelligence test scores with age constant.

Column 5 contains the number of cases used.

It remains now to arrive at some estimate of the correlation between intelligence and deception as measured by a combination of all techniques. From intercorrelations between these techniques, we can estimate the correlation of an unweighted combination of them with intelligence. These inter-r's are given in Table XCIV. If each type of test is considered as a unit and if all standard deviations are considered equal, the correlation between the sum of them and intelligence is obtained by the formula

$$r_{\mathrm{I}\Sigma \mathrm{xi}} = \frac{\Sigma r_{\mathrm{xiI}}}{\sqrt{\mathrm{N} + 2\,\Sigma r}}, \qquad \text{Formula (16)}$$

where Σ_{xi} is the sum of the Xi's of the several tests, Σr_{xiI} is the sum of the r's between intelligence and deception, and Σr is the sum of the intercorrelations of the several tests. Omitting stealing and Parties (partly because adequate intercorrelation data are lacking) and summing the remaining seven in the manner just stated, we find that the resulting correlation with intelligence test score or mental age is $-.54$. The partial r, with age constant, is $-.60$. This, of course, is only an approximation.*

The correlation between intelligence and honesty does not, of course, demonstrate either the existence or the nature of a direct causal relation between the two.

THE RELATION OF AGE AND SCHOOL STATUS TO DECEPTION

Table CVII exhibits a series of correlations between age and deception. The ages range from around 9 or 10 to 15 or 16 for all populations except D and K (the two orphan homes) and also R and S (two private schools), where the range is from 8 to 18. All age distributions represent children as they are found in public schools, private schools, or institutions. No effort has been made to secure unselected age populations.

The sections of this table refer to different techniques, and the columns in each section are self-explanatory except the columns of corrected r's. These r's (except the biserials) are corrected for errors of type I by formulas (5), (6), or (7), described in Chapter VI.

---

* The multiple R between intelligence and a weighted sum of the deception tests would probably run higher than $-.60$.

TABLE CVII

Correlations between Age and Deception

IER School Tests

Population	N	Raw r	Corrected r
A	849	− .007	− .025
B	710	+ .091	+ .079
C	581	+ .220	+ .219
K	135	− .177	− .207
P	232	+ .113	+ .087
Q	123	+ .326	+ .353
S	157	+ .275	+ .332
ABC	2140	+ .038	+ .023
PQS	512	+ .262	+ .289
Total	2652	+ .146	+ .140

IER Home Test

Population	N	Raw r	Corrected r
A	780	− .171	− .222
B	637	− .095	− .144
C	531	− .016	− .042
F–J	1889	+ .118	+ .088
P	230	− .057	− .119
Q	116	+ .100	+ .062
S	139	+ .090	+ .045
ABC	1948	− .103	− .141
PQS	485	+ .022	− .026
Total	2433	− .079	− .120

Speed Tests

Population	N	Raw r	Corrected r
A	877	+ .238	+ .123
C	237	+ .351	+ .217
D	229	+ .100	+ .004
E	584	+ .159	
F–J	2193	+ .320	+ .211
LM	323	+ .335	+ .219
P	301	+ .374	+ .246
R	149	+ .330	+ .245
AC	1114	+ .285	+ .142
PR	450	+ .350	+ .265

Coördination Tests

Population	N	Raw r	Corrected r
E	648	+ .030	+ .050
F–J	2330	+ .125	+ .140
LM	338	+ .136	+ .184

Athletic Contests

Population	N	Raw r	Corrected r
A	124	+ .255	+ .283
C	202	+ .195	+ .233
D	234	+ .098	+ .218
ACD	560	+ .201	+ .238

Lying (SA) Tests

Population	N	Raw r	Corrected r
A	465	+ .134	+ .180
C	196	+ .039	+ .059
D	179	− .012	− .024
P	224	− .017	− .033
	1064	+ .084	+ .102

Puzzle Tests

Population	N	Raw r	Corrected r
DR	325	+ .122	+ .147

Party Tests

Population	N	r (Biserial)
CD	437	− .084

Money Tests

Population	N	r (Biserial)
CD	415	+ .004

CT Ratio

Population	N	r
C	278	− .092
D	251	− .153
F–J	1584	+ .246
LM	317	+ .123

The IER school tests, IER home tests, and the Speed tests are corrected by formula (6); the Coördination, Performance Puzzles, and Athletic Contests, by formula (7). No attempt has been made to compute the probable errors of these corrected correlations because the ordinary formula does not, in this case, apply.

There are more than twice as many positive as negative correlations when single populations are considered; when the populations are combined, all are positive except in the case of the IER home test. Thus when all grades studied are combined and several populations are combined, the results show that the older pupils tend on the whole to cheat slightly more than the younger ones. This seems rather remarkable in view of the fact that intelligence increases with age and is negatively correlated with deception. We have already noted the fact that, when age is kept constant, the negative correlation between intelligence score and deception is increased because of this positive correlation with age. Our problem now is to determine whether this increase with age, which shows itself in the positive r's in spite of the negative correlation with intelligence scores, represents a genuine relation between deception and maturity or is an artifact. We believe that it can be explained by reference to the nature of the test material or to the artificial age selections of the classroom.

We may test these proposals in three ways: (A) by a direct study of the relation of ability to cheating; (B) by a detailed study of the relation of age selection to deception; and (C) by a general consideration of the relation of school grade to cheating. Let us consider first the Speed tests and the suggestion that the correlation with age is due to the relation of ability to cheating.

A. Cheating as a Function of Growth in the Abilities Involved in the Test Material

In the Speed tests and the Athletic Contests we find the highest positive correlations. But in the Speed the tendency for the older pupils to cheat more is due in part, if not entirely, to the fact that they are *more able* to cheat than the younger pupils. In these tests the ability to score is correlated with age and also with cheating. We tried to eliminate this possibility in the administration of the tests by allowing plenty of time for self-scoring so that each pupil could add on as many scores illegitimately as he cared to. But in spite of this we found that those who obtained the highest initial (honest) scores were the very ones who added on the most illegitimately. The only recourse was to measure this factor and partial it out.

In Table CVIII, column 6 contains the partial correlations between cheating and age, with speed ability score constant. It will be noted that in the populations where the data are available these partials are all near zero. In making these determinations

TABLE CVIII *

CORRELATIONS BETWEEN AGE AND CHEATING ON THE SPEED TESTS

POPULATION	1	2	3	4	5	6
A	.238	.123				
C	.351	.217	.274	.354	.547	.030
D	.100	.004	.031	.040	.527	.000
E	.159					
F–J	.320	.211	.422	.530	.411	− .005
LM	.335	.219				
P	.374	.246	.369	.460	.441	.055
R	.333	.245	.296	.386	.729	− .056

* Column 1 contains the raw correlations between the cheating scores of the Speed tests and age when all grades tested are pooled.

Column 2 contains the *r*'s of column 1 after they have been corrected for errors of type I by formula (6). These are lower than the *r*'s of column 1 because the errors of type I in this case are correlated with age.

Column 3 contains the *r*'s between the cheating scores of the Speed tests and the total honest score made on the first two trials, when there was no self-scoring of papers. Four out of the five of these that were computed are high enough to influence the correlation between cheating and age.

Column 4 contains the *r*'s of column 3 corrected for errors of type I.

Column 5 contains the *r*'s between honest scores on the Speed tests and age.

Column 6 contains the partial correlations between age and cheating on the Speed tests with honest score constant.

the measure of "honest ability" is the sum of the total Speed scores obtained on the first two trials, which were *not* self-scored.

The partial correlations of column 6 show that, given a group of the same ability to do the Speed tests, the older and the younger will cheat about the same. From this it would appear that one reason why the older pupils tend to cheat more than the younger on the Speed tests is that the older ones are more able to make use of the opportunity than the younger ones. But this will not explain the case of the IER tests, in which the ability to use the opportunity to cheat is not correlated with age. Some other explanation is needed.

B. CHEATING AS A FUNCTION OF RETARDATION

As we have already shown, there is a negative correlation between the amounts of deception on many of the deception tests and intelligence test scores. The correlations with IQ's are negative and still greater. In any school population of grades five to eight the older pupils are likely to furnish an undue proportion of the lower IQ's. This is especially true of a given grade. Consequently, it may turn out that the older ones cheat more, not so much because they are older as because they have lower IQ's. Certain of our data have been analyzed with a view to determining the extent to which this is true.

The major determination was made on the IER school tests, combining our three larger populations, A, B, and C. The results are presented in Table CIX.* In this table the columns are age groups and the rows are intelligence test scores (CAVI) grouped in broad categories in order to secure sufficient cases in each cell of the table. The entries are the number of cases in each cell ("N") and the mean IER school Xi score of that cell.

---

* The table shows how wide a range of ages is included in a single school grade. The range in intelligence is seen by noting the distribution of CAVI scores in each cell. The central age groups are surrounded by a broad line, and the central intelligence groups of each mid-age group are indicated by bold-face type. These markings will assist the reader in following various relations between deception and age or intelligence or both combined.

TABLE CIX

Relations of Age, Intelligence Test Score, Grade, and IER School Xi, Grades Five, Six, Seven, and Eight, Populations A, B, and C

Grade	Intelligence Test Score (CAVI)	8 Years		9 Years		10 Years		11 Years		12 Years		13 Years		14 Years		15 Years		16 Years	
		N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
5	120–139			2	− 2.28	8	− 2.49	4	− 0.65										
	100–119	3	+ 0.80	11	− 0.40	31	− 3.72	10	− 3.96	3	− 10.27	3	− 10.46	2	− 12.38				
	80–99	7	− 3.61	32	− 2.43	**75**	**− 5.12**	42	− 7.65	16	− 10.79	6	− 12.10	2	− 5.04				
	60–79	3	− 4.22	21	− 5.72	**59**	**− 7.48**	46	− 10.93	21	− 10.91	6	− 14.47	4	− 12.24				
	40–59			3	− 6.03	6	− 7.78	14	− 12.22	11	− 8.97			2	− 17.28				
6	140–159					4	− 4.42	3	− 6.21	1	− 1.17	1	+ 1.72						
	120–139			2	− 1.32	9	− 4.03	17	− 2.74	13	− 1.51	1	+ 0.60						
	100–119			3	− 3.15	18	− 2.46	**54**	**− 3.02**	28	− 3.10	4	− 3.78	3	− 3.22				
	80–99			8	− 3.77	17	− 4.76	**63**	**− 4.95**	44	− 5.01	19	− 5.96	8	− 4.64	2	− 7.32		
	60–79					2	− 4.08	31	− 7.38	35	− 8.10	13	− 7.64	7	− 6.31	4	− 8.53		
	40–59							4	− 6.06			1	− 25.92						
7	140–149					6	− 3.14	5	− 5.43	7	− 1.62	7	− 1.62	1	− 7.38				
	120–139					7	− 4.30	18	− 2.80	**27**	**− 1.81**	17	− 4.12	6	− 2.22	3	− 1.39		
	100–119					9	− 5.07	19	− 4.10	**43**	**− 4.09**	47	− 4.16	14	− 5.77	7	− 3.01		
	80–99							11	− 4.25	**24**	**− 5.59**	27	− 5.96	12	− 5.41	8	− 3.64	1	− 5.64
	60–79									5	− 6.99	5	− 6.65	6	− 10.78	4	− 10.24	5	− 10.81
8	160–179									6	− 5.73	8	− 3.16	2	− 1.16	1	− 4.38		
	140–159							5	− 3.01	14	− 5.13	**23**	**− 4.14**	10	− 2.49	5	− 3.79	1	− 4.20
	120–139							3	− 2.79	18	− 4.62	**43**	**− 4.50**	24	− 5.19	12	− 5.78		
	100–119							9	− 4.98	11	− 5.97	**54**	**− 6.18**	46	− 4.64	21	− 5.71	11	− 5.67
	80–99							2	− 3.74	9	− 7.27	15	− 6.75	18	− 7.09	14	− 8.45	7	− 7.48
	60–79																		

TABLE CIX—*Continued*

Grades Nine and Ten, Population B

Intelligence Test Score (CAVI)	14 Years		15 Years		16 Years		17 Years	
	N	Mean	N	Mean	N	Mean	N	Mean
180–199			2	− 2.98	1	− 1.51		
160–179	5	− 3.14			2	− 1.04		
140–159	5	− 5.75	18	− 3.16	8	− 2.68	2	− 6.96
120–139	5	− 3.13	27	− 5.72	13	− 4.57	3	− 5.54
100–119	5	− 5.17	17	− 5.87	13	− 4.77	8	− 7.92
80–99	2	− 8.58	4	− 9.13	2	− 6.09	1	+ 0.90

Three things are evident from Table CIX: (1) When each grade section of the table is read horizontally, the mean cheating scores of the cells increase, generally, from left to right. This means that for any given level of intelligence test score the older age groups cheat more than the younger groups. That is, the partial correlation between age and cheating, with both grade and intelligence score constant, is positive and rather high. (2) When each section of the table is read vertically, we note that as we read up the columns the means decrease. This means that, when age and grade are constant, the partial correlation between cheating and intelligence test score is negative and rather high. (3) The table may also be read diagonally. If we read from the lower left-hand corner of each grade table diagonally across to the upper right-hand corner, and similarly for other diagonals, we have something corresponding to IQ. These diagonal readings of course are not exact IQ's, but they are the same sort of thing. Here we note that the general tendency is for the means to decrease slightly in all grades except grade five, where the mean cheating scores in the diagonals are about the same. This means that the partial correlation between age and cheating on the IER school tests, with both grade and IQ constant, would probably be slightly negative. That is, of the children in the same grade with about the same

IQ's but varying in ages, the older will tend on the whole to cheat a little less than the younger.*

* A similar determination was made for the Performance Puzzle tests, using populations D and R. But the number of cases in each cell is too small to secure reliable averages for the cells of the table. The results, however, are given in Table CX.

TABLE CX

Relations of Age, Intelligence Test Score, Grade, and Cheating on the Performance Puzzles, Populations D and R

Intelligence Test Score	Grades	10 Years		11 Years		12 Years		13 Years		14 Years		15 Years		16 Years		17 Years	
		N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
130–139	9–10											2	- 8.5			2	-12.0
	7–8																
	5–6																
120–129	9–10									4	- 12.5	6	- 8.5	8	- 10.3	3	- 4.0
	7–8			2	- 9.5	5	- 10.0	5	- 6.4	3	- 8.3						
	5–6	5	- 3.6	2	- 11.0												
110–119	9–10									1	- 7.0	6	- 10.5	3	- 8.3	3	- 6.0
	7–8	2	- 4.0			6	- 7.5	6	- 14.0	7	- 8.0						
	5–6	4	- 7.0	5	- 7.0												
100–109	9–10									1	- 4.0	1	- 18.0	4	- 10.2	3	- 4.8
	7–8					6	- 12.0	6	- 10.3	7	- 13.1						
	5–6	7	- 9.9	7	- 1.2	4	- 7.7										
90–99	9–10									2	- 6.0						
	7–8			5	- 11.4	5	- 7.0	7	- 13.4	7	- 11.7	4	- 13.0				
	5–6	5	- 7.4	8	- 8.4	8	- 9.2	4	- 13.3								
80–89	9–10																
	7–8					5	- 10.4	7	- 12.6	5	- 8.2	6	- 11.8				
	5–6					6	- 12.0	6	- 12.0								
70–79	9–10																
	7–8					1	- 11.0	5	- 8.4	5	- 10.6	7	- 11.4				
	5–6					5	- 11.4										

This method of presenting data of this sort, by plotting two variables as in a correlation scattergram but giving in addition the mean scores on a third variable for each cell, has certain very decided advantages. By noting the general drift of the rows, columns, and diagonals, one may arrive at a safe estimate of the sign of at least three partial *r*'s; and when a separate table is made for each grade, as shown above, the partials may be of a second order. By finding the standard deviations of the distribution in each cell (here we have

The facts are brought out more clearly if the children who are accelerated and retarded are left out of the picture. The heavier lines in Table CIX inclose the central age groups for each grade. As we move toward the left from the central age group, not only do the numbers of cases fall off, but the intelligence scores rise; and as we go toward the right, the intelligence scores fall. That is, within any one grade there is a negative correlation between age and intelligence score, and therefore a much larger negative correlation between age and IQ. Evidently in studying the influence of age on deception, we are dealing with the particular effects on school behavior which may be associated with the facts of acceleration and retardation. We have therefore taken from each grade the three central age groups, which represent a kind of unselected age grouping, and have figured the mean IER school Xi's for these groups, leaving off the nine-year-olds at one end and the fourteen-year-olds at the other. The results are shown in Table CXI. Here the CAVI scores are positively correlated with age, as they should be in a population not artificially stratified, as in the school system.

TABLE CXI

MEAN IER SCHOOL XI'S BY AGE, POPULATIONS A, B, C

	10 YEARS	11 YEARS	12 YEARS	13 YEARS
Number	229	341	285	246
Grades	5–6	5–7	6–8	7–8
Median CAVI	90	93	106	115
Mean Xi	− 5.22	− 5.96	− 4.69	− 4.96

The mean Xi's, however, are somewhat higher for ages 10 and 11 than for ages 12 and 13, age 11 standing highest. But the CAVI relation is just the reverse of this. The correlation, with intelligence constant, therefore would be about zero. This may be taken as representing the nearest we have been able to approximate a

reported only the means), one could easily arrive at a close estimate of the size of the partial *r*'s.

true age-deception relation unmixed with the fact of retardation or intelligence.

Similarly, in Table CXII we have summarized the facts for the central age group of each grade, giving us at the same time a regular advance in both age and grade. Here we find a steadily increasing CAVI score, but not a corresponding shift in deception score. On the contrary, grades six and seven are considerably less deceptive than grades five and eight. As we shall see presently, this is in line with what we found when we took the entire populations of these grades and compared them, as in Table CXVI; only here it is the seventh grade which appears least deceptive.

TABLE CXII

MEAN IER SCHOOL Xi'S BY GRADE, POPULATIONS A, B, C

	GRADE 5	GRADE 6	GRADE 7	GRADE 8
Number	179	172	106	143
Age.	10	11	12	13
Median CAVI	86	96	111	121
Mean Xi	− 5.63	− 4.61	− 3.82	− 5.24

Inasmuch as all intelligence levels have been included in Table CXII, this factor might be thought to have complicated the situation. Hence in Table CXIII only the mid-intelligence groups have been selected from Table CIX. The grade differences are not, however, much altered.

TABLE CXIII

MEAN IER SCHOOL Xi'S BY GRADE AND INTELLIGENCE, POPULATIONS A, B, C

	GRADE 5	GRADE 6	GRADE 7	GRADE 8
Number	134	117	94	120
Age.	10	11	12	13
Intelligence range	60–99	80–119	80–139	100–159
Median CAVI .	82	99	111	123
Mean Xi	− 6.16	− 4.06	− 3.82	− 5.19

It would seem, then, that genuine grade differences probably exist that are not accounted for by the differences in age or intelligence but which are functions of the school system.

Before we turn to a more detailed consideration of grade differences, a few supplementary data regarding retardation will be presented.

Supplementary Data on Retardation. In Book One, Chapter XII, we reported certain slight positive correlations between retardation and deception. The partial correlation between age and deception with grade constant amounts to the same thing. Such partials are given in Table CXIV.

TABLE CXIV

PARTIAL CORRELATIONS BETWEEN AGE AND DECEPTION WITH GRADE CONSTANT

POPULATIONS:	ABC	PQS	E	F–J	LM	DR	ABC	ADP	PR
IER school .	.064	− .189							
IER home . .	− .195	− .068							
Speed.	.413			.037	.375				.327
Coördination			.001	.170	.342				
Puzzles						− .040			
Contests . . .							.283		
Lying (SA) .								.282	

In the IER school and home tests there is no correlation between retardation and deception. This confirms the elaborate study of the fact score of these techniques given in Book One, Chapter XII. In the Speed tests there is (except in populations F–J) a rather significant correlation between Speed cheating and retardation. These facts are shown graphically in the figures of Chapter XII, Book One. In the Coördination tests it appears only in populations L–M. Thus certain populations and certain techniques show a rather marked tendency for the older pupils in a given grade to cheat more than the younger ones; in other populations and certain techniques this is not the case.

C. School Grade and Deception

As our third way of testing the meaning of our positive correlations between age and deception, we may make a direct study

TABLE CXV *

Correlations between School Grade and Deception

IER School Xi				IER Home Xi				Speed			
Population	N	r_{CG}	Corrected r	Population	N	r_{CG}	Corrected r	Population	N	r_{CG}	Corrected r
A	812	− .308	− .329	A	782	− .210	− .228	A	781	− .100	− .338
B	710	+ .096	+ .104	B	673	− .095	− .102	C	237	+ .220	+ .065
C	584	− .081	− .085	C	564	+ .050	+ .055	D	259	− .189	− .360
K	152	− .255	− .263	F–J	1922	+ .222	+ .243	F–J	2288	+ .431	+ .239
P	228	+ .223	+ .272	P	230	− .024	− .026	LM	352	+ .107	− .060
Q	154	+ .125	+ .153	Q	116	+ .045	+ .049	P	309	+ .378	+ .100
S	157	+ .209	+ .230	S	140	+ .061	+ .074	R	166	+ .240	+ .040
ABC	2106		− .038	ABC	2019		− .106				
PQS	539		+ .225	PQS	486		+ .021				

Coördination			
Population	N	r_{CG}	Corrected r
F–J	1846	+ .041	+ .055
LM	332	+ .076	− .080

Athletic Contests			
Population	N	r_{CG}	Corrected r
ACD	589	− .052	+ .058

Puzzles			
Population	N	r_{CG}	Corrected r
D	178	+ .257	+ .256
R	161	+ .192	+ .212
DR	339	+ .225	+ .234

Lying (SA)			
Population	N	r_{CG}	Corrected r
A SA^1	497	− .250	− .310
A SA^2	413	− .021	− .040
C SA^1	190	− .010	− .025
P SA^2	223	− .080	− .132
D SA^2	192	− .061	− .112
ACPD	1515		− .149

* In all populations except D and K (institutions) and R and S (private schools) the grades are five to eight.

The first r's are the raw correlations corrected for broad categories by Sheppard's correction formula; see Kelley, *Statistical Method*, Formula 100. The second r's have been corrected for errors of type I by our general formulas (6) and (7).

of deception in relation to school grade, on the assumption that, when we take the entire population of each grade, the factors of acceleration and retardation are kept about equal for all and are therefore automatically eliminated from the correlations. In this sense, " grade " may be a better measure of maturity than "age."

Table CXV gives the correlations between grade and deception for each technique and each population grouping.

These correlations fluctuate from plus to minus with different populations in all techniques except Puzzles, where they are consistently plus, and lying, where they are all minus. But there is no general drift one way or the other.

In certain populations there are wide differences between grades in the mean or median amounts of deception. Some of these are shown in Tables CXVI to CXVIII.

TABLE CXVI

Grade and IER School Xi

	Populations BC			Populations PQ		
Grade	N	Mean	SD	N	Mean	SD
8	288	− 5.36	4.63	71	− 3.07	3.17
7	286	− 4.70	4.92	86	− 2.55	3.11
6	277	− 4.07	4.87	122	− 2.52	3.11
5	243	− 6.87	6.61	104	− 2.64	3.08

TABLE CXVII

Grade and Speed Xi

Population A				Populations F–J			
Grade	N	Mean	SD	Grade	N	Mean	SD
8	241	− 0.74	1.77	8	437	− 3.90	1.96
7	178	− 0.66	1.96	7	451	− 3.11	2.52
6	174	− 1.00	1.82	6	512	− 2.66	2.76
5	134	− 0.96	1.72	5	500	− 2.13	2.17
4	54	− 2.76	2.81	4	388	− 1.62	1.92

TABLE CXVIII

Grade and Home Xi

Populations F–J			
Grade	N	Mean	SD
8	485	− 3.52	2.31
7	438	− 3.19	2.51
6	499	− 2.77	2.48
5	500	− 2.40	2.65

From these tables the fluctuations from grade to grade may be seen. Occasionally an extreme drop from grade five to grade six may be offset by an extreme rise from grade seven to grade eight. This is conspicuously the case in Table CXVI, which gives the IER school Xi for four populations.

D. Summary

Our general conclusion concerning the relation of cheating to age is that in school populations of grades five to eight, or in any one of these grades, the older tend on the whole to cheat slightly more than the younger. In the case of the Speed tests we have seen that this is due in part to the fact the older are more able to use the opportunity to cheat than the younger. In the case of the IER school tests, we have pointed out that the older of a given grade have lower IQ's than the younger. These observations, together with a less thorough examination of additional data from other techniques, convince us that there is very little, if any, correlation between age and cheating when such factors as intelligence quotient, the ability to make use of the opportunity, retardation, and perhaps still other factors are held constant.

The relation of grade and cheating is not consistently in one direction or the other, but in the case of the IER school tests there seem to be genuine grade differences, the fifth and eighth grades proving more deceptive than the sixth and seventh. This, however, seems to be a function of schooling rather than of maturity.*

---

* One further point should be kept in mind. In all this work the age groups are different children and not the same children measured at different ages. The important consideration for character education is whether or not the same group of children tend to become more or less deceptive as they grow older, just as they become more intelligent as they grow older. On this point our data are only inferential. From them we infer that the deceptiveness of children in the situations represented by our tests does not change much between the ages of 10 and 14, under the kinds of education to which they are normally exposed.

CHAPTER IX

DATA ON SOCIAL AND BIOLOGICAL CONCOMITANTS OF DECEPTION

We have just seen that deception is correlated negatively with intelligence and positively with age, especially when intelligence is constant. But age and intelligence are fundamentally related to certain social and biological factors with which deception is also related. To get a complete picture, it is necessary first to present the parts. We shall follow here roughly the order of topics treated in Chapters IX to XI of Book One.

Three of the methods of determining the socio-economic background of children described in detail in Chapter VIII, Book One, are occupation of father, score on the Sims questionnaire, and score on the Burdick Apperception test. We shall give the data on these in order.

OCCUPATIONS OF PARENTS

Data on occupation of father are available for populations A, B, C, F–J, L, M, and P. In populations A and B the facts were secured by distributing slips of paper to the pupils and asking each to write down the occupation of his father. In the other populations the data were taken from the Sims score sheet, which has four questions on occupation.

The occupations were classified in four groups roughly, somewhat after the Taussig scale. The four groups are as follows:

I. Professional, large business, managerial service, commercial service, such occupations as accountant, architect, broker, banker, doctor, teacher, inspector, officials of various sorts

II. Artisan proprietors, owners of small business, foremen, highly skilled laborers

III. Skilled laborers, plumbers, electricians, plasterers, mechanics, etc.
IV. Unskilled laborers

This grouping, while somewhat arbitrary, served our purpose well enough.

After classifying the occupations of the fathers in these four groups, we distributed the deception scores of the children by techniques. The medians of these distributions, together with the per cents who cheated in each, are given in Tables CXIX to CXXI.

Separate distributions were made for each occupational group, for each population, and for each kind of deception. The summary at the foot of each table includes all populations except when otherwise noted. We have made these determinations only for the classroom deception tests, the number of cases being too small to warrant doing it for the out-of-classroom tests.

The summaries at the foot of each section show that the children whose fathers are in group I cheat considerably less than the others in each type of test. In the IER school tests and the Speed tests there is a steady increase in the amount of cheating as we go down the occupational scale. In the IER home test and the Coördination tests, group I stands out as being more honest than any of the other three.

The section headed "CT Ratio" * shows a small but steady increase going down the occupational scale. We have tested the differences for their statistical significance and find that the difference between groups I and II is 2.0 times its standard error, between II and III, 4.3 times its standard error, and between III and IV, 2.6 times its standard error.

The *r*'s in each case are negative, and most of them are large enough to be reliable,† none having a PE greater than ± .03.

---

* The ratio is based on the fact score, being the number of times each pupil cheated in proportion to the opportunities offered.

† These are biserial *r*'s obtained by correlating groups I and II against III and IV.

TABLE CXIX

Median Amounts of Deception at Each Occupational Level

IER School Tests				
Occupational Level	N	Median Xi	% C's	Expected Xi
Population A				
I	91	− 1.6	23	− 4.6
II	257	− 3.8	48	− 4.8
III	185	− 3.6	46	− 5.1
IV	80	− 5.4	60	− 5.6
Population B				
I	74	− 2.7	35	− 3.9
II	246	− 3.8	42	− 4.1
III	152	− 4.1	43	− 4.6
IV	74	− 5.1	50	− 4.5
Population C				
I	44	− 4.3	43	− 6.3
II	97	− 7.7	58	− 6.5
III	54	− 7.6	61	− 6.3
IV	0	—	—	—
Population P				
I	195	− 1.8	20	—
II	14	− 2.1	29	—
III	5	—	—	—
Summary—IER Xi				
I	404	− 2.0	26	− 3.8
II	614	− 4.0	47	− 4.5
III	396	− 5.8	46	− 5.3
IV	154	− 6.0	55	− 5.3

Biserial $r = - .450$

IER Home Tests			
Occupational Level	N	Median Xi	% C's
Population A			
I	91	− 1.4	29
II	236	− 1.8	31
III	164	− 1.5	31
IV	69	− 1.9	36
Population B			
I	67	− 0.9	28
II	241	− 2.1	39
III	148	− 1.4	27
IV	67	− 2.1	30
Population C			
I	39	− 1.8	33
II	91	− 2.6	42
III	53	− 4.4	60
IV	0	—	—
Population P			
I	197	− 1.3	17
II	13	− 1.7	31
III	5	—	—
Population F–J (Sample)			
I	6	—	—
II	76	− 2.5	42
III	360	− 2.6	45
IV	71	− 3.0	48
Summary, Home Xi (*Less Population F–J*)			
I	394	− 1.4	23
II	581	− 2.1	36
III	370	− 2.0	34
IV	136	− 2.1	33

Biserial $r = - .326$

TABLE CXX

MEDIAN AMOUNTS OF DECEPTION AT EACH OCCUPATIONAL LEVEL

SPEED Xi			
Population C			
Occupational Level	N	Median	% C's
I	44	– 0.8	32
II	96	– 1.9	44
III	57	– 1.5	37
IV	0	—	—
Population F–J (Sample)			
I	0	—	—
II	78	– 5.1	71
III	370	– 4.2	66
IV	69	– 4.0	71
Population LM			
I	47	0.00	19
II	92	– 0.30	10
III	38	– 0.25	5
IV	—	—	—
Population P			
I	184	– 0.25	6
II	11	– 0.27	0
III	—	—	—
IV	—	—	—
Summary — Speed Xi			
I	275	– 0.25	11
II	277	– 1.50	36
III	465	– 3.20	57
IV	69	– 4.0	70

Biserial $r = -.549$

COÖRDINATION Xi			
Population F–J (Sample)			
Occupational Level	N	Median	% C's
I	0	—	—
II	60	– 7.0	83
III	213	– 6.8	87
IV	45	– 6.0	95
Population LM			
I	55	– 3.3	62
II	103	– 4.8	68
III	45	– 6.6	89
IV	0	—	—
Summary — Coördination Xi			
I	55	– 3.3	62
II	163	– 6.0	77
III	258	– 6.8	87
IV	45	– 6.0	95

Biserial $r = -.284$

TABLE CXXI

Mean CT Ratio and Intelligence at Each Occupational Level

CT Ratio					
Population C					
Occupational Level	N	Median			
I	57	.30			
II	119	.32			
III	71	.32			
IV	8	.35			
Population F-J (Sample)					
I	—	—			
II	51	.60			
III	229	.40			
IV	43	.51			
Population LM					
I	60	.30			
II	101	.21			
III	52	.30			
IV	—	—			
Summary — CT Ratio					
Occupational Level	N	Median	Mean	SD	σ M
I	117	.300	.303	.217	.020
II	271	.347	.352	.233	.014
III	352	.424	.432	.230	.012
IV	51	.537	.530	.258	.036

Intelligence (CAVI) Score		
Population A		
Occupational Level	N	Median
I	94	96
II	247	94
III	168	91
IV	73	85
Population B		
I	72	122
II	242	119
III	141	112
IV	69	113
Population C		
I	44	98
II	84	95
III	52	98
IV	6	93
Population P		
I	197	110
II	22	90
III	—	—
IV	—	—
Summary — CAVI Score		
I	407	112
II	595	105
III	361	97
IV	148	97

Biserial $r = -.275$

The correlation coefficients in Tables CXIX to CXXI, as summarized below, are biserials and are not, strictly speaking, usable in determining partials. We shall, however, risk it for the sake of making a rough estimate of the influence of intelligence on them.

TABLE CXXII

Partial Correlations between Occupational Level and Deception with Intelligence Constant *

Test	Population	r_{OC}	r_{OI}	r_{IC}	$r_{OC.I}$
IER school test	ABCP	− .450	+ .390	− .360	− .360
IER home test	ABCP	− .326	+ .390	− .255	− .251
Speed . . .	CF−JLMP	− .549	+ .385	− .400	− .467
Coördination .	F−JNM	− .284	+ .265	− .210	− .245
CT ratio . . .	CF−JLM	− .275	+ .270	− .167	− .243

* The subscripts of the correlation column have the following meanings: O = occupational level, C = deception score, and I = CAVI intelligence test score.

While these partials are somewhat unreliable, they indicate that the correlation between occupational level is not wholly due to intelligence. In Book One, Chapter IX, a comparison is made between median cheating scores at each occupational level and the scores that might be expected because of differences in intelligence. The two upper levels have lower cheating scores than would be expected, and the lower levels higher scores than would be expected. This indicates negative partials, as shown in Table CXXII above.

CORRELATION BETWEEN SIMS SCORE AND DECEPTION

The Sims Score Card for measuring socio-economic status is described in Book One, Chapter VIII, and the general results of its use are given in Chapter IX. Table CXXIII gives the complete data, showing the median amount of cheating and per cent of cheaters at each Sims level. The correlations are given

TABLE CXXIII

SIMS SCORE AND CHEATING

	IER School Xi, Populations C and P			IER Home Xi, Populations C and P			Speed Xi, Populations C and P			Speed Xi, Populations CPLMF–J		
Sims Score	N	Median Xi	%C's	N	Median Xi	%C's	N	Median Xi	% C's	N	Median Xi	% C's
16.0–16.9	55	− 1.5	16	55	− 1.4	22	54	− 0.7	9	63	− 0.6	13
15.0–15.9	97	− 1.6	17	98	− 1.5	34	104	− 0.6	10	124	− 0.6	11
14.0–14.9	61	− 1.0	20	57	− 1.1	35	64	− 0.8	16	113	− 0.4	11
13.0–13.9	38	− 5.0	50	38	− 1.6	42	44	− 1.2	39	89	− 0.4	27
12.0–12.9	35	− 5.3	52	30	− 3.4	60	36	− 1.8	42	83	− 0.8	28
11.0–11.9	20	− 5.0	50	20	− 4.0	55	25	− 1.7	40	89	− 1.2	34
10.0–10.9	18	− 7.0	56	18	− 3.2	50	20	− 1.5	35	106	− 0.9	33
9.0–9.9	23	− 10.5	70	21	− 4.8	86	27	− 1.5	33	192	− 1.5	35
8.0–8.9	3	− 18.5	100	4	− 5.0	100	6	− 3.0	50	233	− 1.7	39
										155	− 1.8	35
N =	350			341			380			1247		

	IER School	IER Home	Speed C and P	Speed CPLMF–J
σ_{xi} =	2.01	2.35	2.07	2.50
Mean Xi =	− 1.33	− 2.20	− 1.10	− 1.84
r_{SC} =	− .490	− .307	− .294	− .293
r_{SIQ} =	+ .349	+ .349	+ .349	+ .395
r_{CIQ} =	− .476	− .389	− .450	− .265
$r_{SC.IQ}$ =	− .399	− .156	− .165	− .207

	Coördination Tests, Populations FGHIJ (Sample) and LM			Contests, Population C		Parties, Population C		CT Ratio, Populations CJLM		Intelligence, Populations CJP	
Sims Score	N	Median Xi	% C's	N	% C's	N	% C's	N	Median CT	N	Median IQ
16.0–16.9	14	− 6.1	93	8	38	8	50	25	.40	7	135
15.0–15.9	25	− 6.0	68	17	24	17	59	46	.30	44	122
14.0–14.9	60	− 4.5	60	16	44	17	41	81	.33	90	123
13.0–13.9	48	− 4.2	65	29	41	29	31	82	.28	68	122
12.0–12.9	50	− 5.3	80	26	58	36	47	72	.37	41	116
11.0–11.9	60	− 6.2	78	26	19	22	59	84	.37	52	114
10.0–10.9	88	− 6.7	86	24	50	19	37	109	.48	60	112
9.0–9.9	164	− 6.6	88	30	37	28	68	127	.56	103	109
8.0–8.9	235	− 6.5	88	8	25	9	56	139	.60	174	102
7.0–7.9	152	− 6.5	86					75	.58	191	99
								10	.30	111	97
										8	95
N =	896			184		185		850		949	

σ_{xi} = 16.0
Mean Xi = − 6.1

σ_{CT} = .282 σ_{IQ} = 30.7
Mean CT = .465 Mean IQ = 108.6

	Coördination Tests	Contests	Parties	CT Ratio	Intelligence
r_{SC} =	− .100	− .100	− .210	− .130	
r_{SIQ} =	+ .250	+ .243	+ .243	+ .280	+ .395
r_{CIQ} =	− .185	− .103	− .184	− .111	
$r_{SC.IQ}$ =	− .055	− .078	− .172	− .104	

at the foot of each section. The partials, with IQ constant, are significant only in the case of the IER tests. A discussion of the importance of these results is found in Book One, Chapter IX.

CORRELATION BETWEEN THE BURDICK APPERCEPTION TESTS AND DECEPTION

These tests, as explained in Book One, Chapter VIII, are designed to measure the cultural background of the child rather than the socio-economic status of the home. The results, discussed in full in Chapter IX, Book One, are based on the data of Table CXXIV.

TABLE CXXIV

Correlation of Burdick Scores with Various Factors

Test	Population A		Special A*		Population CP	
	N	r	N	r	N	r
IER school	208	− .463	94	− .536	282	− .385
IER home .	186	− .037	90	− .086	249	− .115
Speed . .	449	− .450			304	− .375
Intelligence	219	+ .529			278	+ .409
Sims . . .					311	+ .510
Age . . .	455	+ .079			339	− .263
Partials						
School Xi with Burdick Intelligence constant		− .285				− .319
Speed Xi with Burdick Intelligence constant		− .415				− .233
School Xi with Burdick Sims constant . . .						− .236
Speed Xi with Burdick Sims constant . . .						− .275

* A group of most honest and most dishonest cases selected for special study.

The Burdick scores correlate lower with deception on the IER tests than Sims scores, but considerably higher with cheating on the Speed tests. No other deception techniques have been given with the Burdick. The correlation of .510 between Burdick and Sims indicates that they do not measure the same thing; and the partials, with intelligence constant, indicate that each measures certain factors associated with deception quite independently of their association with intelligence. This suggests putting Sims, Burdick, and intelligence scores together into a kind of battery to see how well deception might be predicted from the combination. The maximum *r* of the optimum combination of Sims and Burdick scores in populations C and P with IER school cheating is − .635, and with Speed, − .520. The maximum correlation between IER school deception and the optimum combination of Sims, Burdick, and intelligence (CAVI) is − .86. This determination was made on populations C and P, where the correlation between school Xi and CAVI intelligence is only − .250. It would probably run higher in populations where the *r* between CAVI scores and school Xi is higher. The *r* of − .86 is too low for accurate prediction, especially in view of the fact that the *r*'s used in the computation were corrected for errors of type I. Such errors cannot be eliminated from the individual scores. The figure thus has only theoretical value. It simply indicates that the tendency to deceive is closely associated with some combination of intellect, socio-economic background, and general cultural level. As soon as some quantitative measure of school morale and group codes is available, it is quite possible that a combination of these with Sims and Burdick scores and intelligence will yield correlations of .90 with deception.

THE RELATION OF RELIGIOUS AFFILIATION TO DECEPTION

Religious affiliation, like occupation, is another indication of a certain type of social experience and social environment. It is not likely that membership in one or another religious organization would influence deception except in so far as the members might be stimulated or inhibited by the social and cultural contacts involved. There may be distinct experiences and types of social influence traditional with a denomination which would affect the learning of honesty.

Data on religious affiliations were secured from two populations. Table CXXV gives the results for the IER school tests and Table CXXVI for the IER home test. Table CXXVII gives the fact scores for both the home and school tests in terms of the percentage who cheated. Table CXXV gives the number of cases for each denomination, the median deception scores, the median intelligence scores, and the median deception scores that would be expected from a group of its level of intelligence. This expected score is simply the median of that array of deception scores in the scattergram of intelligence and deception which is over the intelligence score in question.

TABLE CXXV

Denomination and School Xi

(After Allowance Is Made for Differences in Intelligence)

Denomination	Population A				Population B			
	N	Median Xi	Intelligence	Expected Xi	N	Median Xi	Intelligence	Expected Xi
Baptist	26	− 9.5	70	− 7.6	90	− 5.2	99	− 3.4
Christian					36	− 4.1	91	− 4.8
Christian Science					27	− 2.0	113	− 3.0
Episcopal	79	− 2.6	98	− 2.6	12	− 4.0	110	− 3.0
Jewish	63	− 5.4	91	− 3.1				
Lutheran	21	− 2.7	89	− 3.2	85	− 2.0	104	− 3.1
Methodist	41	− 1.9	97	− 2.4	94	− 4.0	104	− 3.1
Presbyterian	138	− 1.7	103	− 2.0	26	− 2.0	108	− 3.0
Reformed	10	− 1.4	100	− 2.5	46	− 2.5	105	− 3.1
Roman Catholic	176	− 3.0	92	− 3.1	34	− 4.0	104	− 3.1
United Brethren					142	− 3.5	111	− 3.0

TABLE CXXVI

DENOMINATION AND HOME Xi

DENOMINATION	POPULATION A			POPULATION B			POPULATIONS A AND B (COMBINED)		
	N	Median	%C's	N	Median	%C's	N	Median	%C's
Baptist	24	− 2.05	33	73	− 0.99	26	97	− 1.0	28
Christian				42	− 2.43	48	42	− 2.4	48
Christian Science				10	− 2.05	40	10	− 2.0	40
Episcopal	72	− 1.50	31	6	− 2.55	50	78	− 1.8	32
Jewish	66	− 3.27	53	5	− 2.30	40	71	− 3.0	52
Lutheran	19	− 0.80	26	79	− 2.08	38	98	− 2.5	36
Methodist	31	− 9.60	32	76	− 2.95	49	107	− 5.1	44
Presbyterian	130	− 1.32	29	22	− 1.55	45	152	− 1.4	31
Reformed	11	− 0.80	27	36	− 3.05	50	47	− 2.3	45
Roman Catholic	160	− 2.08	35	18	− 2.22	39	178	− 2.1	36
United Brethren				110	− 2.19	42	110	− 2.2	42

TABLE CXXVII

DENOMINATION AND PER CENT CHEATING AT SCHOOL AND HOME *

DENOMINATION	POPULATION A					POPULATION B					
	N	0	1	2	3	N	0	1	2	3	4
Baptist	26	4%	31%	46%	19%	90	38%	34%	25%	3%	0%
Christian						36	33	42	19	6	0
Christian Science						27	44	44	8	4	0
Episcopal	79	37	33	23	8	13	38	38	15	0	9
Jewish	63	13	32	32	24	10	40	30	10	10	10
Lutheran	21	24	48	24	5	87	40	31	21	6	2
Methodist	41	41	37	15	7	94	27	45	19	9	1
Presbyterian	138	42	26	19	13	27	40	30	19	11	0
Reformed	10	30	60	10	0	45	33	40	16	9	2
Roman Catholic	176	27	32	27	14	34	32	38	20	6	3
United Brethren						150	34	42	13	9	1

* This table reads: Of 26 Baptists in population A, 4% did not cheat on the IER tests either at school or at home, 31% cheated once, 46% cheated twice, 19% cheated three times, etc.

These tables reveal certain interesting facts. In the first place, wide differences between denominations are apparent even after allowance has been made for differences in intelligence. In both populations A and B, the Baptists cheat on the school tests nearly 2 SD more than one would expect from their median intelligence score. Also in both populations the Presbyterian and Reformed cheat less than one would expect from their median intelligence level. The number of cases, however, in each case is too small to justify an effort at exact determinations. These differences seem large and are not wholly accounted for by differences in intelligence. They may be accounted for by differences in home background. Unfortunately, we do not have home background measures on sufficient numbers in these two populations to find the extent to which this is true. We may have here certain differences between religious denominations in the median amounts of deception that are not to be accounted for on the ground of either intelligence or home background. These differences are probably local and not general. But the main point is that almost any type of social grouping may show differences between groups in deception that are unaccounted for by differences in either intelligence or home background.

RACE OR NATIONALITY AND DECEPTION

In populations A and C we obtained from the children data on the birthplace of their parents. In case their parents were born in the United States, we tried to find out the race of the child. Data such as these mix nationality and race in such a way as to make it difficult to know whether we are dealing with biological concomitants or more strictly social concomitants. Race is biological; nationality is cultural. Certain of our data are distinctly race data. For example, the Negroes, the Italians, and the Hebrews are rather distinct races. We are not interested here in establishing honesty norms for races or nationalities; but we are, rather, concerned with the fact that racial and national differences do exist, and that cheating may be influenced in some way by remote ancestry or national cultures.

TABLE CXXVIII

Comparison of Races and Nationalities in Respect to Cheating on IER School Tests

Race or Nationality	Population A					Population C				
	N	Median Xi	% C's	Median CAVI	Expected Xi	N	Median Xi	% C's	Median CAVI	Expected Xi
American . .	250	− 1.9	56	105	− 1.9	113	− 4.6	55	105	− 5.8
Negro	100	− 7.3	80	86	− 3.2					
Italian . . .	79	− 6.4	84	84	− 3.4	18	− 11.1	72	93	− 6.6
Jewish . . .	63	− 5.4	88	91	− 3.1	183	− 5.6	62	107	− 5.4
Scandinavian	28	− 1.7	53	101	− 2.5	16	− 9.1	81	105	− 5.8
German, Austrian	52	− 3.0	65	102	− 2.4	67	− 4.3	66	106	− 5.7
Slavonic . . .	31	− 6.6	84	94	− 3.2					
British Isles . .	49	− 1.8	59	104	− 1.9	51	− 8.4	74	99	− 6.2
French . . .	10	− 3.0	30	102	− 2.3	12	− 5.1	58	115	− 5.0

TABLE CXXIX

Comparison of Races and Nationalities in Respect to the IER Home Test

Race or Nationality	Population A			Population C		
	N	Median Xi	% C's	N	Median Xi	% C's
American	225	− 1.4	28	107	− 2.0	42
Negro	88	− 1.3	32	5	− 3.6	
Italian	74	− 2.1	35	17	− 1.7	24
Jewish	56	− 3.5	54	169	− 3.7	49
Scandinavian . . .	25	− 1.0	20	9	− 1.6	11
German and Austrian	40	− 1.6	38	52	− 2.1	33
Slavonic	28	− 2.7	43			
British Isles	46	− 1.7	28	42	− 1.6	36
French	9	− 5.8	100	10	− 3.1	50

Table CXXVIII compares races and nationalities in respect to cheating on the IER school tests, populations A and C. Table CXXIX compares races and nationalities in respect to the IER home test.

In each of these tables we have the number of cases, the median cheating score, and the per cent cheating. In Table CXXVIII differences in intelligence are allowed for. Differences in economic level are noted by comparing occupational groups by nationality or race. Such a comparison is made in Table XXXV of Chapter XI, Book One, where such conclusions as the facts seem to warrant are printed.

FAMILY RESEMBLANCE IN DECEPTION

We have just seen that there are differences in deception between racial or national groups that may not be accounted for by concomitant differences in the intelligence or home environment of the groups studied. We shall now see what differences may exist among families.

In Book One, Chapter X, correlations between siblings in deception are reported and discussed. Reference is there made to this chapter for more complete statistical data and more technical discussions of them. Table CXXX is in part a duplicate of Table XXX, Chapter X, Book One, with certain data added. Columns 1, 2, and 3 of this table are identical with columns 1, 2, and 3 of Table XXX, Chapter X.

The section on the home test is omitted here because the *r*'s represent collusion to an unknown degree. The *r*'s in column 4 between the deceptive scores of siblings indicate that cheating runs in families. The problem is to determine the extent to which the resemblance indicated by these correlations is due to a common environment or a common ancestry. Four hypotheses were advanced in Chapter X, Book One, for their interpretation: (1) collusion; (2) the influence of a common environment; (3) resemblance in intelligence; and (4) common heredity. Collusion was ruled out for all tests except the one taken home, on the grounds

TABLE CXXX

STATISTICAL DATA ON SIBLING RESEMBLANCE IN DECEPTION

1		2	3	4	5	6	7	8	9
POPULATIONS		N(Pairs)	$r_{C_1C_2}$	H Range	r_{HC}	$r_{C_1C_2 \cdot H}$	r_{CI}	$r_{C_1C_2 \cdot I_1}$	$r_{IQ_1IQ_2}$
SPEED	A	76	.220	1.00	− .275 (Occupational)				
	LM	70	.292	.55	+ .220 (Sims)	.255	− .295 (IQ)		
	F–J	224	.208	.50	+ .126 (Sims)	.185	− .037 (IQ)		
	ALM F–J	370	.225	1.00	− .300 (Sims) *	.237	− .200	.215	.289
	D	43	.300	.35			− .030	.300	.118
IER SCHOOL	A	108	.445	1.00	− .345 (Occupational)	.368	− .457 (CAVI)	.334	.433
	B	138	.433	.80	− .206 (Occupational)	.405			
	AB	246	.440	1.00	− .350 (Occupational)*	.364	− .493	.433	.322
	K	94	.333	.35			− .100	.330	.221
	K (+ ½)	38	.333	.35					
	K (− ½)	46	.333	.35					
COÖRDINATION	F–J	239	.322	.50	+ .193 (Sims)	.296	+ .040 (IQ)		
	LM	74	.271	.55	− .010 (Sims)	.270	− .313 (IQ)		
	E	89	.271	.60					
	EF–JLM	402	.400	1.00	− .200 (Sims) *	.371	− .030	.396	.289
	D	43	.300	.35			− .250	.300	.118
All populations and all tests combined			.470	1.00	+ .30 *	.418			

$r_{C_1C_2}$ = correlation between siblings in deception
H = home background
I = intelligence
I_1 = intelligence of one of a pair of sibs

* Estimated.

that sibling pairs had no chance to work together on the classroom tests. The second hypothesis is more difficult to test. There are, however, certain things we may do with the data which may suggest the answer to the problem. In the first place, it is necessary to determine the *r*'s between home environment and deception. These *r*'s, based on the sibling cases only, are given in column 5 of Table CXXX. Since different populations had different home background tests, we can only estimate the *r*'s for the combined populations. Such estimated *r*'s are starred in Table CXXX. The estimates are based on the facts given in the first three sections of this chapter and on the facts given in Chapter IX of Book One. The *r*'s (both observed and estimated) of column 5, Table CXXX, are lower than those reported in Chapter IX of Book One and sometimes of different sign. This may be accounted for by the fact that by taking only sibling cases we select environmental factors artificially. Our interest at this point is to determine whether they are high enough to account for sibling resemblance in deception, assuming that the members of any pair have exactly the same home environment.

Four methods of determining this were used in Chapter X, Book One. We shall supplement that discussion by certain observations. The first method was that of comparing the observed sibling *r*'s in deception of each population with the range (or variation) in home background of that population. If sibling resemblance in deception is due to variations in home background which are correlated with deception, then the greater the home background variation, the greater the sibling resemblance. From the distributions of the Sims scores, the Burdick scores, observation of the neighborhoods, and the occupational groupings, we have estimated the relative ranges of the home backgrounds of the populations used in this study. These estimates are given in column 4 of Table CXXX. This column is based on Figure 45 of Chapter IX, Book One, calling the widest range 1.00 and expressing all others as percentages of this. In Table CXXX the rank difference correlations between the size of the *r*'s in column 3 and the home background width as expressed in column 4 are for the Speed *r*'s, − .32; for the four IER school Xi *r*'s (using population K only once), + .95; and for the five Coördination *r*'s, + .42. Thus in the Speed tests, the wider ranges of home background are associated with the smaller sibling *r*'s, but the reverse is true for the IER school tests and the Coördination tests. These *r*'s, of course, are highly unreliable.

At this point note should be made of the fact that populations D and K are children in asylums. In a sense their environmental variability is zero, but we have given it a rating of .35 (which is perhaps too high) mainly on the basis of what we knew of their general environment previous to commitment.

The hypothesis of a common environment may be tested further by arbitrarily restricting the range of home backgrounds to any desired degree. The partial correlation technique does this. The partial *r*'s between siblings in deception, with home background constant, are given in column 6 of Table CXXX. These partials are based on the assumption that both members of a pair have the same home environment, and hence that the *r* between sibs with respect to home environment is + 1.00. This being the case, the usual formula for partial correlation becomes *

$$r_{C_1C_2 \cdot H} = \frac{r_{C_1C_2} - r^2_{CH}}{1 - r^2_{CH}}. \qquad \text{Formula (17)}$$

The partials in column 6 of Table CXXX clearly indicate that, even if different pairs of siblings have the same home background scores (home background being determined by the methods described in Chapter VIII, Book One), they still show variations in deception that are correlated.

In Chapter X of Book One reference is made to this chapter for the discussion of the fourth method of determining the relative effect of environment on sibling resemblance. Let us turn to this final problem. We have just noted that the partial correlation formula becomes $r_{C_1C_2 \cdot H} = \frac{r_{C_1C_2} - r^2_{CH}}{1 - r^2_{CH}}$ when the correlation

---

* This formula is based on the assumption that each pair is entered twice in the scattergram, in which case $r_{C_1H} = r_{C_2H}$.

$r_{C_1H} = r_{C_2H}$, as it will when $r_{H_1H_2}$ is 1.00 * and when the correlation scattergrams are symmetrical. If $r^2_{CH} = r_{C_1C_2}$, then $r_{C_1C_2 \cdot H} = 0$. Thus the correlation between home background and deception must equal the square root of the correlation between sibs in deception before it will completely account for it.

We have estimated that the correlation between siblings for Speed, IER school, and Coördination tests combined is not less than .47. If this is to be wholly accounted for by virtue of the type of social influence measured, then the correlation between home background and cheating should be $\sqrt{.47}$, or .685. It is doubtful if the measures of the home background of the subjects of this study would ever yield a correlation as high as this. The highest estimate is probably not over .50.

The second application of this technique may now be made. As has been noted, our measures of home background are not perfect. It may well be that, with more refined methods for revealing other factors than those included in the three methods described, the correlation between deception and home background might be increased to a point sufficient to account for the correlations between siblings. Suppose for a moment that this has been done. Then in the case of the Coördination test where $r_{C_1C_2} = .40$, the correlation between cheating and home background would have to equal $\sqrt{.40}$, or .63, for likeness in home background fully to account for the .40. Let us suppose that this is the case and that the r of .63 is based on an unselected population covering a wide range of environmental levels. Then if we reduce the variability of the home background (as measured by our hypothetically adequate test) by one-half, we shall automatically reduce the r of .63 to .45 † and the sibling r from $.63^2$, or .40, to $.45^2$, or .21. This .21 is the predicted r between siblings from a population when the standard deviation of the environment variable is reduced

---

* In fact, it is probably less, a home never being quite the same to all its members, even in its external features, much less in its influence. In proportion as the true correlation is less than 1.00, the succeeding arguments are strengthened.

† For formula, see Kelley, T. L., *Statistical Method*, p. 225, Formula 187.

one-half and the r between cheating and the full range of the environment is .63.

Now as a matter of fact, taking our rough range-of-background estimate (column 4, Table CXXX) as our measure of the relative range of different groups, population F–J shows about half the variation of the total range, and Table CXXX shows that the correlation between siblings on the Coördination tests in population F–J is .32, which is only .11 higher than the predicted .21. Also populations L–M and E, likewise greatly restricted in scope, show r's in each case of only .27. These three r's have a PE of .03 for F–J, and .05 for L–M and E. But the predicted r of .21 is within 4 PE of one of the observed r's and within 2 PE of the other two. The meaning of this is that in the case of Coördination tests (peeping) whatever resemblance there is between siblings may in fact be accounted for by such environmental factors as are included in our measures.

In the Speed tests, however, restricting the environment does not reduce the r's in the way called for by our formula. Sibling resemblance has little if anything to do with the gross environmental factors.

In the IER school tests (copying from answer sheet) there is a slight fall in sibling r when range of background is restricted. The $r_{C_1C_2}$ here is .44. To be wholly accounted for by home variation, the r_{CH} must be .663. Reducing the variation by three-quarters, as for population D–K, drops this theoretical r_{CH} to .30 and the corresponding $r_{C_1C_2}$ to $.30^2$, or .09. The range of background in population D–K (orphans) is surely not more than a quarter of the entire range as to gross factors, yet the actual $r_{C_1C_2}$ is .33! Evidently there is something at work in creating sibling resemblance that is not accounted for by the gross likeness in sibling environment. However, if the background is reduced in variability by only one-half, the $r_{C_1C_2}$ only drops to .25.

In this discussion of common environment as a possible cause of sibling resemblance, we have been dealing with the kinds of difference found between congested districts and comfortable suburban homes. We have shown that they may account for resemblances in the Coördination tests, but not wholly for resemblance in the Speed and school IER tests.

The third hypothesis advanced in Chapter X, Book One, is that the resemblance between siblings in deception may be due to the common factor of intelligence. It is a well-known fact that siblings correlate around .50 in intelligence, and we have shown elsewhere that intelligence is correlated with honesty. Column 7 of Table CXXX gives the *r*'s between cheating and intelligence for certain populations, and column 8 gives the partials between sibling deception with the intelligence of one member of each pair constant.* The partial *r*'s in column 8 of Table CXXX show that, even if one member of each pair always has the same IQ, substantial *r*'s between siblings in deception still remain.

It would be interesting, but perhaps not very safe, to partial out both home background and intelligence from the sibling correlations. But this would mean finding pairs bearing the same or nearly the same home background scores, and within this group taking only those pairs where one member has a given IQ. Our data are too limited to permit such rigid selection. A theoretical determination could be made, but it would have little value.

The last hypothesis is that of heredity. The supporting data consist in a comparison of sibling *r*'s in deception with *r*'s for intelligence, *i.e.*, a comparison of columns 3 and 9 of Table CXXX.

---

* In partialing out intelligence from sibling *r*'s, it should be remembered that two members of a pair will not have the same IQ except by chance. It is then impossible to keep the intelligence of both members constant unless we pick out such pairs as have about the same IQ. In this case formula (17) will apply. Keeping constant the intelligence of one member of each pair and finding the partial *r* gives a figure which would result if we picked out the pairs in which the IQ of one member of each was the same as that of one member of all the other pairs. The formula used is as follows:

$$r_{C_1C_2 \cdot I_1} = \frac{r_{C_1C_2} - r_{C_1I_2} \cdot r_{C_1I_1}}{\sqrt{1 - r^2_{C_1I_2}}\,\sqrt{1 - r^2_{C_1I_1}}} \qquad \text{Formula (18)}$$

Here $r_{C_1C_2}$ is the correlation between the deception of one member of a pair and that of the other member of the same pair. $r_{C_1I_2}$ is the *r* between the cheating score of one member of a pair and the intelligence score of the other member of that pair. $r_{C_1I_1}$ is the *r* between the cheating score and intelligence score of the same individual.

CHAPTER X

DATA ON TYPES OF SCHOOL EXPERIENCE AND DECEPTION

(REFERRING TO CHAPTERS XV AND XVI OF BOOK ONE)

DECEPTION IN PROGRESSIVE AND CONVENTIONAL TYPES OF SCHOOL

In Book One, Chapter XV, it was pointed out that, in order to compare progressive with conventional schools in respect to cheating, it would be necessary to compare schools attended by children of about the same age, intelligence level, and home background. In the nature of the case a situation completely meeting these requirements probably does not exist. One approximating it, however, was found, which is described in Book One, Chapter XV, where there is also a summary of the important results. The details will be given here.

The two schools chosen, namely, L and M, differed only in respect to the general methods used. They were both public schools and drew from the population of one community. Table CXXXI shows the difference between them in the tendency to deceive. The differences are given by grade and by testing techniques. The two extreme right-hand columns contain the differences between the mean cheating scores for each grade and the ratio of this difference to its standard error. The rows marked "Total" at the foot of each section show means, SD's, etc. for each school as a whole.

In practically all grades and test techniques, the progressive school cheating means are less than the conventional school means. In all the "Total" comparisons the differences of the means exceed three times the standard errors except for the Coördination tests, where the ratio is 2.48. On the whole, Table CXXXI shows significantly more cheating in the conventional school than in the progressive school.

TABLE CXXXI

Comparison of Progressive and Conventional Schools in Respect to Deception

Conventional					Progressive					
IER Arithmetic Test										
Grade	N	Mean	SD	%C's	N	Mean	SD	%C's	Difference in Means	D/σ_D
7	71	− 3.19	2.88	42	21	− 2.40	2.22	33	0.79	1.37
6	56	− 3.98	3.42	68	16	− 0.09	1.14	00	3.89	7.22
5	47	− 3.23	3.80	40	18	− 1.77	1.83	28	1.46	2.10
Total	174	− 3.54	3.33	50	55	− 1.51	2.81	22	2.03	4.46
Speed Tests										
7	75	− 0.63	1.65	24	21	+ 0.46	1.15	5	1.09	3.46
6	51	− 0.34	1.68	21	15	+ 0.15	0.76	0	0.49	1.59
5	48	− 2.05	3.07	46	19	− 0.05	0.85	5	2.00	4.12
4	67	0.00	1.47	10	26	+ 0.24	0.64	4	0.24	1.09
Total	241	− 0.68	2.02	24	81	+ 0.23	1.70	4	0.91	3.95
Coördination Tests										
7	75	− 5.46	2.82	77	21	− 3.75	2.70	57	1.71	2.54
6	57	− 5.46	3.33	75	18	− 2.55	2.88	50	2.91	3.59
5	48	− 4.62	2.74	77	19	− 4.71	2.02	84	− 0.09	0.15
4	68	− 5.52	3.28	75	26	− 5.98	3.24	81	− 0.46	0.61
Total	248	− 5.31	3.08	77	84	− 4.40	3.12	64	0.91	2.48
CT Ratio										
7	72	.315	.195		21	.154	.150		.161	3.96
6	56	.293	.191		19	.130	.110		.163	4.54
5	47	.336	.234		19	.236	.112		.100	2.34
4	68	.284	.184		26	.279	.129		.005	0.15
Total	243	.305	.200		85	.205	.146		.100	4.90

To what influences may these differences be ascribed? We shall proceed by the process of elimination and show that they

TABLE CXXXII

Comparison of Progressive and Conventional Schools with Respect to Age, Mental Age, IQ, and Home Background

	Conventional			Progressive				
				Chronological Age (Months)				
Grade	N	Mean	SD	N	Mean	SD	Difference in Means	D/σ_D
7	70	159	16.8	22	142	10.7	17	
6	54	148	14.7	18	139	13.8	9	
5	50	132	12.7	19	121	9.1	11	
4	61	116	12.6	25	117	9.4	− 1	
	235	139.6	22.11	84	133	15.6	6.6	2.96
				Mental Age (Months)				
7	74	159	24.5	21	165	22.4	− 7	
6	56	153	19.0	17	158	19.2	− 5	
5	47	138	17.1	19	122 *	10.1	16	
4	66	122	15.2	22	117	9.9	5	
	243	144	22.8	79	141.5	25.8	4.5	1.39
				IQ				
7	74	103	20.4	21	115	13.0	− 12	
6	50	104	17.0	17	116	12.5	− 12	
5	47	106	18.7	19	98 *	12.3	18	
4	64	114	18.4	23	115	17.7	− 1	
	235	107	19.4	80	112	15.0	− 5	2.48
				Sims Score				
7	76	13.1	2.08	22	13.8	1.51	− .7	
6	56	12.6	2.22	16	13.4	1.24	− .8	
5	48	12.8	2.10	18	13.6	1.74	− .8	
	180	12.65	2.15	56	13.62	1.63	− 1.0	3.70

---

* These intelligence scores look small, but they are given here as reported by the school.

are not wholly due to differences in age, intelligence, or home background. Comparisons in respect to age, mental age, IQ, and home background (Sims score) are given in Table CXXXII. Here we have significant differences in age and home background. The pupils in the conventional school are older, grade for grade; they have slightly lower mental ages in grades six and seven, but higher in grades four and five, lower IQ in all grades but the fifth, and lower Sims scores in all grades. The sizes of these differences are shown in Table CXXXII.

Whether these differences will account for the differences in deception depends on the correlations between cheating and age, MA, IQ, and Sims. These correlations are given in Table CXXXIII.

TABLE CXXXIII

Correlations between Cheating and CA, MA, IQ, and Sims Score

	Arithmetic Xi	Speed Xi	Coördination Xi	CT Ratio	Mental Age
Age	+ .144	+ .219	+ .136	+ .123	
Mental age . .	− .250	− .067	− .194	− .208	
IQ	− .245	− .236	− .078	− .247	
Sims score . .	− .082	− .323	− .048	+ .111	+ .209

The correlations between age and cheating are all too low to account for the differences found. A correlation between age and cheating running no higher than .219 * and an average difference no greater than 6.6 months in age between the two schools would not be expected to account for the difference found in deception.

In the case of mental age the correlations are of the wrong sign to account for the differences. Here as elsewhere the correlations between mental age and cheating are negative, that is, the lower the mental age, the greater the cheating. But here the progres-

---

* In the case of Speed, and this is probably due to the nature of the material. See Chapter VIII, where we show that, when the factor of ability is partialed out, the correlation drops to zero.

sive school has a lower average mental age and cheats less. If differences in mental ages were equalized, differences in deception would presumably be greater.

The IQ's of the progressive groups average five points higher than those of the conventional groups and the correlations are negative. In the case of the CT ratio the correlation is .247. The regression of the CT ratio on IQ shows that for every increase of one point in IQ we have a corresponding decrease of .00243 points in CT ratio. The regression equation is $CT = -.00243\ IQ + .53987$. Substituting the conventional school mean IQ, we get a predicted CT ratio of .280, whereas the actual mean CT ratio is .305. Substituting the progressive mean IQ gives a predicted CT ratio of .268 as against the actual mean of .205. Thus the conventional school mean CT runs .025 higher than the IQ would warrant and the progressive mean CT runs .063 lower than the IQ would warrant, with a net predicted difference of .088 whereas the actual difference is .100. This five-point difference in IQ will not account for the difference in mean CT ratio. In fact, the difference in IQ would need to be about 41 points to account for a difference of .100 in CT ratio.

In home background there is a difference of 1.0 in the mean Sims scores, the progressive school scoring higher. But the correlation is positive in the case of CT ratio, so that the group with the higher Sims average would be expected to cheat more. The reverse is the case. Hence differences in Sims score would not account for this difference in CT ratio. It may, however, in the case of the Speed tests, where the correlation is − .323. The regression shows, however, that for every increase of 1.0 point on Sims there is a corresponding decrease of .288 Xi in the Speed score. But the difference in Speed Xi is .910. Hence the difference of 1.00 point in Sims accounts for only about one-third of the difference in Speed Xi.

There remains one further determination. In Chapter IX it was shown that there is a negative correlation between occupational level and deception. Table CXXXIV shows the ratio of cheating to opportunity at each occupational level.

TABLE CXXXIV

Deception in Schools L and M at Each Occupational Level

Conventional School				Progressive School				Difference	
Occupational Level	N	%	Mean CT	Occupational Level	N	%	Mean CT	Difference in Means	D/σ_D
I	36	24	.314	I	19	29	.186	.128	2.71
II	70	47	.279	II	36	56	.206	.073	2.14
III	40	27	.483	III	10	15	.170	.313	6.30
IV	4	3							

Table CXXXIV shows that, when occupational level of the father is kept constant, we still get differences in favor of the progressive school. These differences are not large, however, except in case of the third occupational level, where the difference is very marked; yet we are dealing here with such a small number of cases that generalizations are risky.

Going back to Table CXXXI for a moment, it will be noted in the section on CT ratio, column headed "D/σ_D," that the difference is very slight in the fourth grade and is much greater in the upper grades. This indicates that the progressive school experience tends to diminish cheating. But the amount scores in the upper sections of the table do not quite bear this out, except in the case of the Coördination tests.

The general conclusion in Chapter XV of Book One was that progressive school experiences are less conducive to deception than conventional school experiences. The foregoing facts are reported in corroboration.

THE INFLUENCE OF SCHOOL MORALE

Certain differences among schools in the tendency to deceive are reported in Chapter XV of Book One, Table LX. Standard errors are not readily available for the means of this table, but

Table CXXXV, below, shows similar figures on two different tests for which the unreliabilities are known.

TABLE CXXXV

School Differences in Deception

	School Xi				Speed (Raw Scores)			
School	N	M	SD	$\frac{\sigma}{\sqrt{N}}$	N	M	SD	$\frac{\sigma}{\sqrt{N}}$
(c)	70	− 2.1	3.8	.45	38	− 24	24.3	3.9
(d)	22	− 2.2	2.3	.49	29	− 24	25.5	4.7
(e)	62	− 4.2	4.2	.53	40	− 50	52.0	8.2

Schools (c) and (d), which are outlying schools belonging to the same system as the village school (e), differ from (e) as follows, in multiples of the standard error of the difference:

School	School Xi	Speed
(e) − (c)	3.02	2.86
(e) − (d)	2.78	2.76

In view of the fact that the two tests were given on two occasions a year apart, the difference between (e) and (c) and between (e) and (d) is genuinely significant. Inferences from these facts are drawn in Book One, Chapter XV.

TEACHER INFLUENCE

In our endeavor to determine the possible influence of the teacher on the deceptiveness of the pupils, the first step is to show what differences actually occur between school groups of the same intelligence and background. In Table CXXXVI there are a few samples.

TABLE CXXXVI

Certain Group Differences in IER School Xi

Grade	N	M	σ	$\frac{\sigma}{\sqrt{N}}$
Case I				
5B	31	– 10.7	5.8	1.04
5A	26	– 14.5	5.1	1.00
6B	28	– 12.9	4.2	0.79
6A	33	– 5.4	3.3	0.58
Case II				
5	35	– 3.52	4.4	0.74
6	35	– 0.73	2.6	0.44
Case III				
7	35	– 5.4	5.6	0.95
7	40	– 5.4	5.4	0.86
7	59	– 4.2	5.4	0.71
7	35	– 2.5	2.6	0.43
Case IV				
8	27	– 5.5	4.9	0.94
8	23	– 4.6	3.8	0.79
8	31	– 4.2	4.5	0.81
8	29	– 2.9	2.7	0.51

As stated in Book One, Chapter XVI, case I is a school in which cheating in three classrooms was almost universal. In the 6A group, however, there was significantly less. This class differs from any of the other three by more than four times the standard error of the difference.

Case II is a school in which there was relatively little cheating. Yet even here the two class means differ by more than three times the standard error of the difference.

Cases III and IV are from a junior high school in a mid-western city. Each group had its home room and a certain amount of organization. In both the seventh and eighth grades there is a significant difference between the bottom group and the top group.

These figures are reported as illustrations of the fact and amount of exceptional classroom differences found within the same school, where conditions such as home background and intelligence are similar. It is not known to what extent the teachers may have been responsible for these differences. But it is interesting to note that, while we do occasionally find exceptionally *honest* classrooms, we rarely find one which is exceptionally *dishonest*, as compared with the rest of the classes in the same school.

Some classroom differences occur repeatedly. Table CXXXVII contains the mean scores on either two or three classroom tests for certain classes in grades four, five, and six in four schools. The teachers and pupils are the same for each test reported.

TABLE CXXXVII *

Certain Classroom Deception Means in Rank Order —
All Scores, Xi's

School 1			School 2		School 3			School 4	
Speed	Coördination	IER	Speed	Coördination	Speed	Coördination	IER	Speed	IER
− 0.75	− 3.08	− 2.98	− 0.97	− 6.28	− 1.10	− 6.23	− 2.30	+ 0.80	− 1.33
− 1.03	− 4.92	− 2.66	− 1.03	− 7.51	− 2.40	− 5.27	− 2.37	+ 0.51	− 1.40
− 1.54	− 5.95	− 1.91	− 1.82	− 7.65	− 2.67	− 7.70	− 3.63	+ 0.11	− 1.41
− 2.07	− 5.98	− 1.95	− 3.87	− 8.30	− 3.72	− 8.80	− 1.99	0.00	− 1.95
− 2.10	− 6.73	− 2.68	− 4.78	− 7.68	− 4.95	− 7.70			
− 4.95	− 6.60	− 2.70	− 6.21	− 9.55					

* The ranks, somewhat modified, are given in Table LXI, Book One, Chapter XVI.

The Speed and Coördination test scores taken alone show only two displacements of one step each among twelve classrooms, and in school 4 the Speed and IER ranks are identical.

Another way of showing whether the teacher influences deception is to determine whether classroom groups are random samplings of the total population tested in regard to the tendency to deceive.* Conclusions from this procedure will be valid in proportion as other factors than teacher influence are kept constant. We are able to achieve this desired condition only approximately by dealing with one type of school or system at a time or with one group of schools working along the same general lines. The data for six such studies are given in Tables CXXXVIII to CXLII.

TABLE CXXXVIII

Classroom Speed Test Scores
Two Similar Metropolitan Public Schools in Same Community

Grade	Sex	N	M	SD	$\frac{\sigma}{\sqrt{N}}$	
4B–3	B and G	36	− 1.20	2.09	.35	
5A–1	B	39	− 1.54	2.46	.39	
5B–1	B	41	− 2.00	2.43	.38	
5B–2	G	34	− 1.45	2.65	.45	
5B–3	B and G	33	− 2.08	2.41	.42	
6A–2	G	31	− 0.51	1.75	.31	
6A–3	G	27	− 2.13	3.84	.74	
6B–1	B	43	− 4.95	2.95	.45	
6B–2	G	39	− 1.05	1.82	.29	
4B–1	G	45	− 3.68	2.62	.39	
5A–1	G	25	− 1.00	1.85	.37	
5B–1	G	30	− 0.91	1.38	.25	
6A–1	G	38	− 1.95	1.77	.29	
6A–2	G	30	− 6.13	4.34	.79	
6B–1	G	32	− 0.82	1.43	.25	$\frac{1.54}{.41} = 3.76$
			$\sigma = 1.54$		Average .41	

---

* If each classroom group is a random sample of the total population with respect to deception, then the average of the standard errors of the group mean deception scores should equal the SD of the means of the groups, provided that other factors with which deception is correlated are constant. For example, should we find a number of classroom groups having the same intelligence, the same home background, the same school atmosphere, etc., the average of the SE's of the means of the groups will equal the SD of a distribution of their means, unless other selective factors such as teacher influence are present.

TABLE CXXXIX

Classroom Speed Test Scores
A Third Metropolitan Public School

Grade	Sex	N	M	SD	$\frac{\sigma}{\sqrt{N}}$
4A–1	B and G	41	– 2.74	2.78	.43
4A–2	B and G	38	– 2.08	1.83	.30
4B–1	B and G	36	– 1.85	1.16	.19
4B–2	B and G	31	– 2.82	1.84	.33
5A–1	B and G	27	– 5.16	4.11	.79
5A–2	B and G	28	– 3.44	2.87	.54
5B–1	B and G	39	– 2.45	2.28	.37
5B–3	B and G	35	– 2.88	2.06	.35
6A–1	B and G	25	– 5.02	3.45	.69
6A–2	B and G	26	– 2.32	2.09	.41 $\frac{1.17}{.44} = 2.66$
			$\sigma = 1.17$		Average .44

TABLE CXL

Classroom IER Arithmetic Test Scores
A Metropolitan and Mid-Western Public School — Grades Five to Eight

N	M	SD	$\frac{\sigma}{\sqrt{N}}$
43	– 3.11	2.97	.45
42	– 3.46	2.7	.42
37	– 1.96	3.1	.51
41	– 2.96	2.7	.42
23	– 2.40	2.6	.54
41	– 1.55	1.8	.28
43	– 2.63	2.9	.44
43	– 1.20	1.9	.29
33	– 9.77	2.4	.42
39	– 2.05	2.15	.35
33	– 1.45	2.5	.44
42	– 6.40	3.3	.51
38	– 1.18	1.9	.31
34	– 2.38	2.6	.45
27	– 5.32	2.9	.56
35	– 2.58	2.8	.47 $\frac{2.17}{.43} = 5.05$
	$\sigma = 2.17$		Average .43

TABLE CXLI

Classroom Speed Test Scores
Two Experimental Schools

N	M	SD	$\frac{\sigma}{\sqrt{N}}$
21	+ .40	0.97	.212
19	+ .74	0.74	.17
25	− .40	1.41	.28
28	.00	1.53	.29
23	− .63	1.22	.25
41	− .74	1.51	.24
26	.00	0.99	.194
43	− .46	1.39	.21
17	+ .11	1.32	.32
26	+ .23	0.64	.13
19	+ .05	0.85	.20
15	+ .11	0.78	.21
21	+ .28	1.16	.25
	σ = .416		Average .227 $\frac{.416}{.227} = 1.83$

TABLE CXLII

Classroom IER Arithmetic Test Scores
Three Experimental Schools

N	M	SD	$\frac{\sigma}{\sqrt{N}}$
21	− 1.47	2.42	.53
23	− 0.88	1.17	.24
26	− 2.53	3.35	.66
27	− 0.75	1.72	.33
26	− 2.04	2.44	.48
25	− 0.98	1.53	.31
43	− 2.30	1.49	.23
42	− 2.07	2.33	.36
17	− 1.43	1.77	.43
18	− 1.11	1.03	.24
25	− 1.78	2.76	.55
20	− 1.02	1.44	.32
43	− 0.97	1.48	.23
32	− 0.86	1.75	.31
18	− 1.79	1.83	.43
16	− 0.11	1.13	.28
21	− 2.42	2.22	.48
	σ = .71		Average .38 $\frac{.71}{.38} = 1.9$

The significant facts of Tables CXXXVIII to CXLII are summarized in Table CXLIII.

TABLE CXLIII

TEST OF PRESENCE OF FACTORS UNEQUALLY INFLUENCING THE DECEPTIVENESS OF CLASSROOMS

TABLE	σ OF M'S	AVERAGE OF SE'S OF M'S	RATIO
CXXXVIII	1.54	.41	3.8
CXXXIX	1.17	.44	2.7
CXL	2.17	.43	5.1
CXLI	0.42	.23	1.8
CXLII	0.71	.38	1.9

We may conclude that in all the schools tested we are dealing with samplings that are selected in some way with regard to deception tendencies. The differences among classrooms are not chance differences.* The public schools using traditional methods show greater differences among classrooms than the experimental schools. The fact that, even when conscious effort is made to employ more modern methods, there is a genuine but small difference among classrooms not accounted for by chance lends support to the hypothesis that the significant factor is the personal relation of teacher and pupil rather than other elements of technique.

One of the experimental schools reported on showed some large differences which we thought it would be well to check by repeating certain tests one year from the time of the first testing to see whether there were constant differences among the teachers and whether the pupils showed significant changes in twelve months. The results tabulated in Tables CXLIV and CXLV are discussed in Chapter XVI of Book One.

---

* Since some of these groups are graded groups, one large factor that tends to influence the higher ratios of Table CXLIII is intelligence. In another study we equated several groups with respect to intelligence and still got ratios greater than 1.00.

TABLE CXLIV

RECORDS OF FIVE TEACHERS, A YEAR APART AND WITH DIFFERENT CHILDREN *

	TEACHER A								TEACHER B							
	1925				1926				1925				1926			
	N	M	σ	σ_M	N	M	σ	σ_M	N	M	σ	σ_M	N	M	σ	σ_M
Arithmetic	22	−1.78	3.65	.78	20	−2.40	3.61	.81	26	− 7.34	10.96	2.15	28	− 3.36	5.54	1.05
Information	22	+0.96	3.96		24	−1.24	5.26		27	− 1.80	4.19		27	− 0.84	5.92	
Completion	22	+0.40	3.36		23	−0.10	3.49		27	− 1.42	4.14		25	− 1.66	3.92	

	TEACHER C								TEACHER D							
	1925				1926				1925				1926			
	N	M	σ	σ_M	N	M	σ	σ_M	N	M	σ	σ_M	N	M	σ	σ_M
Arithmetic	24	−2.74	6.07	1.24	23	−3.84	4.85	.96	26	− 1.42	3.80	.75	30	− 3.64	4.07	.74
Information	24	−4.00	4.80		21	−0.64	3.58		26	− 1.50	4.44		27	− 2.60	3.97	
Completion	24	−0.66	3.23		21	+0.02	2.59		26	+ 1.58	3.48		27	− 0.06	3.87	

	TEACHER F								TOTAL							
	1925				1926				1925				1926			
	N	M	σ	σ_M	N	M	σ	σ_M	N	M	σ	σ_M	N	M	σ	σ_M
Arithmetic	43	−4.70	6.60	1.01	38	−3.76	5.99	.97	141	− 3.80	7.09	.596	142	− 3.52	5.05	.424
Information	43	−3.64	4.65		36	−2.94	5.04		142	− 2.24	4.78		135	− 1.80	4.97	
Completion	43	−1.18	2.93		37	−0.42	2.77		142	− 0.38	3.60		133	− 0.48	3.38	

* The scores are IER school tests, in terms of differences, not Xi's.

From Tables CXLIV and CXLV we can compare five teachers. First we may note whether there are year-to-year changes in each classroom. Second, we may see whether there are year-to-year changes in pupils consistent with year-to-year changes in the classroom.

Unfortunately, as we noted in Book One, our records were made in October each year, and consequently there is some ambiguity

TABLE CXLV

RECORDS OF THREE GROUPS OF CHILDREN, A YEAR APART AND WITH DIFFERENT TEACHERS

	I A — **1925**				I C — **1926**				II B — **1925**				II D — **1926**			
	N	M	σ	σ_M	N	M	σ	σ_M	N	M	σ	σ_M	N	M	σ	σ_M
Arithmetic	18	−1.94	3.93	.93	18	−3.28	4.51	1.06	19	− 7.40	11.59	2.66	19	− 3.08	4.03	.93
Information	18	+0.28	3.46		18	−1.60	3.78		19	− 2.76	4.07		19	− 1.82	3.94	
Completion	18	+0.84	3.30		18	+0.50	2.67		19	− 1.18	4.08		19	− 0.02	3.32	

	I C, II D, III E — **1925**				I, II, III F — **1926**				TOTAL — **1925**				TOTAL — **1926**			
	N	M	σ	σ_M	N	M	σ	σ_M	N	M	σ	σ_M	N	M	σ	σ_M
Arithmetic	24	−3.50	5.78	1.18	24	−4.34	6.36	1.3	61	− 4.26	8.01	1.03	61	− 3.62	5.27	.68
Information	23	−3.06	2.47		23	−2.72	5.76		60	− 1.96	4.33		60	− 2.10	4.71	
Completion	24	+0.34	3.07		24	0.00	3.17		61	+ 0.02	3.59		61	+ 0.14	3.08	

	I C, II D — **1925**				I, II F — **1926**				NEW F — **1926**			
	N	M	σ	σ_M	N	M	σ	σ_M	N	M	σ	σ_M
Arithmetic	18	−2.72	4.18	.99	18	−4.06	5.56	1.31	14	− 2.78	5.12	1.37
Information									13	− 2.58	2.80	
Completion									13	− 0.72	2.21	

regarding the relative amount of influence exerted by the teacher of the classroom tested and the teacher of the preceding year, who had the same children in her charge for several months. We shall first state the facts and then indicate the most reasonable explanation of these differences.

As the Arithmetic test showed most of what little deception occurred in the school, this will be taken as a basis of comparison in Table CXLVI. Teachers A and B are fifth-grade; teachers C and D, sixth-grade; and teacher F, seventh-grade. Pupils from A go to C, from B to D, and the girls from C and D go to F. F also receives pupils from a third sixth grade, in charge of teacher E, as well as new pupils from other schools and a few skipped from the fifth grade.

TABLE CXLVI

COMPARISON OF SIX TEACHERS, ARITHMETIC DIFFERENCES*

	1925	1926	D/σ_D	1925	1926	D/σ_D	1925	1926	D/σ_D	NEW 1926	D/σ_D
	TEACHER A			TEACHER C			TEACHER F			TEACHER F	
All pupils	1.78	2.40	.55	2.74	3.84	.70	4.70	3.76	.67	2.78	.58
Pupils constant	1.94	——	——	→	3.28	.95					
Pupils constant				4.00	——	——	→	5.00	.32		
	TEACHER B			TEACHER D			TEACHER F				
All pupils	7.34	3.36	1.66	1.42	3.64	2.1					
Pupils constant	7.40	——	——	→	3.08	1.53					
Pupils constant				1.70	——	——	→	3.30	1.13		
	TEACHER E			TEACHERS C AND D			TEACHER F			TEACHER F	
Pupils constant				2.72	——	——	→	4.06	.82	2.78	.67
Pupils constant	5.84	——	——	——	——	——	→	5.16	.17		
All groups	3.80	3.52	.38	All constant			4.26	3.62	.52		

* The signs of the means in this table are all minus.

TABLE CXLVII

GAINS AND LOSSES IN DECEPTION SCORE OF TEACHERS A, B, C, D, AND F, ARITHMETIC ONLY†

PUPILS CHANGING 1925 and 1926	A	B	C	D	F	ALL
	+ 0.62	− 3.98	+ 1.10	+ 2.22	− 0.94	− 0.28
PUPILS CONSTANT 1925 to 1926	A–C	B–D	C–F	D–F	CD−F	ALL
	+ 1.34	− 4.32	+ 1.00	+ 1.60	+ 1.34	− 0.64

† This table reads: The pupils in A's class in 1926 had a mean cheating score 0.62 higher than the mean score of her pupils of 1925; the pupils who passed from the class A had in 1925 to the class B had in 1926 had a mean score 1.34 higher when in B's class than when in A's; etc.

The small multiples of the SE of the differences in means reported are due chiefly to the small number of cases available. Any comparisons must therefore be taken as suggestive and not conclusive. Ignoring these measures of significance for the moment and considering only the raw differences, we have Table CXLVII.

Let us assume for the moment that the critical influence on the pupils tested is exerted by the teacher that has had the group during the year rather than by the teacher into whose class they have come just before being tested. Table CXLVII shows that A's pupils cheat more after a year (A–C), whereas B's pupils cheat considerably less (B–D). Indeed, in B's case there are nine instances of cheating in 1925 and only two instances a year later among the same children. Furthermore (Table CXLVI) A's children a year later (when they are with C) are a little worse than B's children a year later (when they are with D) although A's children began 1925 by being very much less deceptive than B's (1.94 as against 7.40).

We find that the particular children who advanced from C to F were relatively deceptive with C and did not change with F. In the case of D's pupils, those who advanced were a little more deceptive than the rest of the groups in 1925 and became still more deceptive before being tested with F in 1926.

B thus stands out as though she exerted a degree of influence in the direction of honesty not found in the other classrooms.

TABLE CXLVIII

Relative Deceptiveness of Five Groups of Children in Three Tests *

Under the Same Teacher		Under a New Teacher
October, 1925 — Arithmetic	March, 1926 — Speed	October, 1926 — Arithmetic
D 1.70	B 14.3	B–D 3.08
A 1.94	A 19.2	A–C 3.28
C 4.00	D 28.9	D–F 3.30
F 4.70	C 35.6	C–F 5.00
B 7.40	F 40.1	

* The signs of the means in this table are all minus.

Our Speed tests were given to these groups in March, 1926, while they were still with the teachers they had at the time the IER tests were given in October, 1925. The results of this test may thus be inserted between those of the two occasions on which the IER tests were given. Table CXLVIII shows the comparisons in rank order, with the mean test scores. The children are the same for the three occasions, but on the third occasion they move to another teacher as indicated.

Thus we see that in October, 1925, the B group was the worst, but that B's pupils in D's room in October, 1926, were among the best. This corresponds to the fact that B's pupils in March, 1926, after almost a year with B, were at the head of the list. It may be concluded that B probably exerted an exceptional influence on her pupils during 1925–26.

CHAPTER XI

DATA ON THE EFFECTS OF MORAL AND RELIGIOUS EDUCATION

In Chapters XVIII, XIX, and XX of Book One we have described certain methods of moral education together with the main results of their effects on deception. Three methods were studied, the Sunday school, a method of character education called system X, and another method called Y. The reader is referred to Chapter XVIII for a description of system X and to Chapter XIX for system Y and the Sunday schools. We shall offer here the statistical data supporting the conclusions stated there.

SYSTEM X

Table CXLIX compares X and non-X boys in school C. Here the X training was optional in each group. There were from 48 to 143 X boys and from 125 to 400 non-X boys in the groups tested.

The facts in Table CXLIX support the following conclusions about system X in school C:

1. The X boys cheated more, grade for grade, than the non-X boys.
2. A larger per cent of the X boys stole money on the money test than of the non-X boys.
3. The X boys had a slightly higher mean IQ and a slightly higher Sims score than the non-X.
4. The higher the rank in the system, the more the X boys cheated.

TABLE CXLIX

COMPARISON OF X AND NON-X BOYS, SCHOOL C

IER SCHOOL TEST					IER HOME TEST				
X, 143 cases; Non-X, 131 cases					*X, 132 cases; Non-X, 125 cases*				
Grade	Mean Arithmetic Xi		% Cheating on 3 School Tests		Grade	Mean Xi		% Cheating	
	X	Non-X	X	Non-X		X	Non-X	X	Non-X
$5B^2$	− 1.9	− 2.1	41	48	$5B^2$	− 3.5	− 3.7	59	52
$5B^3$	− 1.9	+ 0.1	24	13	$5B^3$	− 3.3	− 4.2	50	44
$6A^1$	− 7.3	− 3.5	91	70	$6A^1$	− 3.8	− 1.5	54	33
$6A^2$	− 1.1	− 1.2	29	25	$6A^2$	− 2.3	− 2.2	35	31
$6B^1$	− 3.8	− 5.6	61	85	$6B^1$	− 2.5	− 1.3	40	36
$6B^2$	− 3.0	− 1.9	50	26	$6B^2$	− 3.0	− 2.2	40	26
$7A^1$	− 6.1	− 4.9	90	81	$7A^1$	− 2.3	− 1.5	40	19
$7A^2$	− 3.2	− 2.4	50	42	$7A^2$	− 1.8	− 1.0	10	13
	− 3.66	− 2.69	54	48		− 2.99	− 2.15	44	30

PARTY TESTS			ATHLETIC CONTEST			STEALING		
Times Cheating	X	Non-X	Times Cheating	X	Non-X		X	Non-X
0	44%	51%	0	63%	63%	Number . . .	48	115
1	39	34	1	18	22	% Stealing	27	9
2	17	12	2	17	10			
3		3	3	2	5			
% Cheating	56	39	% Cheating	37	37			

CT RATIO			CC RATIO*		IQ		SIMS SCORE	
	X	Non-X	X	Non-X	X	Non-X	X	Non-X
Number	66	170	64	98	64	400	60	350
Mean	.35	.31	.32	.25	122	120	12.4	12.3
% Cheating . . . . (at least once)	97	83	100	95				

X RANKS	N	MEAN CT RATIO
3 stars	10	.40
2 stars	12	.35
1 star	11	.37
0 stars	32	.27

---

* Like the CT ratio except that *all* tests are included, not simply the classroom tests.

Table CL states the results of a special study of the X system in five public schools, two of which have the system and three have not. All schools are in the same neighborhood, attended by children of the same race, nationality, religion, and social background. These are schools F, G, H, I, and J. As H and I were handled as one school, we relettered our populations for this study as follows:

A. Mixed, through grade six; girls, seven and eight
B. Boys, through grade seven; girls, through grade eight
C. Girls, through grade eight
D. Mixed, through grade six

TABLE CL

Comparison of X and Non-X Schools by Grades *

School		Grade	All Tests — CT Ratio						Home Test — Per Cent Cheating					
			Boys		*Girls*		*Total*		*Boys*		*Girls*		*Total*	
			Mean	N	Mean	N	Mean	N	%	N	%	N	%	N
X	A	4	.395	43	.281	26	.352	69						
	A	5–6	.402	176	.355	186	.378	362	28	165	37	178	33	343
	A	7–8			.481	300	.481	300			46	295	46	295
	B	4			.469	68	.469	68						
	B	5–6	.627	122	.428	162	.513	284	36	126	46	203	43	329
	B	7–8			.494	179	.494	179			55	133	55	133
Non-X	B	4	.373	58			.373	58						
	B	5–6	.530	42			.530	42	21	28			21	28
	B	7–8			.633	137	.633	137			56	129	56	129
	C	4			.548	75	.548	75						
	C	5–6			.441	146	.441	146			33	141	33	141
	C	7–8			.705	300	.705	300			50	290	50	290
	D	4	.520	63	.552	46	.533	109						
	D	5–6	.480	99	.457	104	.468	203	37	94	49	100	43	194

* The columns headed "Mean" contain the ratio of the number of times the group cheated to its opportunities. The columns headed "%" show the per cent of each group that cheated on the home test. The "N" columns show the number in each group.

In comparing the X and non-X pupils we have used only the fact scores. One reason for this is that, in this case, the fact of cheating seemed more important than the amount. Another is that the fact scores are easier to handle and interpret than the amount scores, and the comparisons come out about the same, whichever scores we use.

The five schools are compared by grade level and by sex. The schools above the middle horizontal are the X schools, those below the non-X. The left-hand section of the table refers to the CT ratio (the proportion of cheating to the number of chances), the right-hand, to the home test. The following are the most important features of this table.

1. The fourth-, fifth-, and sixth-grade boys cheat more on the

TABLE CLI

Comparison of X and Non-X Schools by Sex

School	All Tests — CT Ratio								
	Boys			*Girls*			*Total*		
	Mean	N	Rank	Mean	N	Rank	Mean	N	Rank
X A	.401	219	1	.425	512	1	.417	731	1
X B	.627	122	4	.463	409	2	.501	531	3
Non-X B	.439	100	2	.633	137	5	.551	237	4
Non-X C				.608	521	4	.608	521	5
Non-X D	.495	162	3	.486	150	3	.491	312	2
	Home Test — Per Cent Cheating								
	Boys			*Girls*			*Total*		
	%	N	Rank	%	N	Rank	%	N	Rank
X A	28	165	2	43	473	1	39	638	1
X B	36	126	3	50	336	4.5	45	462	4.5
Non-X B	14	28	1	50	129	4.5	44	157	3
Non-X C				45	431	2	45	431	4.5
Non-X D	37	94	4	49	100	3	43	194	2

school tests and less on the home test than the girls in the corresponding grades.

2. In all schools the seventh and eighth grades cheat more than the fifth and sixth.

Table CLI compares the schools. It shows that school A ranks first (the lowest in deception) except in the case of the home test, boys, where it is second. But the other X school, B, ranks 3 on the school tests and 4.5 on the home test.

Table CLII compares the X and non-X groups by grade and sex. The following points stand out:

1. In the home test there are no significant differences between the X and non-X where comparisons are made by sex and grade.

2. The fourth-grade X boys and X girls cheat less on the school tests than the non-X fourth grade. These differences all exceed three times their SD's.

3. In the fifth and sixth grades there is no difference between the boys on the school tests, but the X girls cheat less than the

TABLE CLII

COMPARISON OF GROUPS IN X ORGANIZATION WITH GROUPS NOT IN X ORGANIZATION BY GRADE AND SEX

GRADE	ALL TESTS — CT RATIO						HOME TEST — PER CENT CHEATING					
	Boys		*Girls*		*Total*		*Boys*		*Girls*		*Total*	
	Mean	N	Mean	N	Mean	N	%	N	%	N	%	N
X 4	.395	43	.417	94	.410	137						
5–6	.494	298	.388	348	.437	646	31	291	42	381	38	672
7–8			.486	479	.486	479			48	428	48	428
All X	.481	341	.442	921	.453	1262	31	291	46	809	42	1100
Non-X 4	.448	121	.549	121	.500	242						
5–6	.494	141	.448	250	.464	391	34	122	40	241	38	363
7–8			.530	437	.530	437			52	419	52	419
All non-X	.471	262	.507	808	.498	1070	34	122	47	660	45	782

non-X fifth- and sixth-grade girls. The difference is 2.30 times its SD.

4. In the seventh and eighth grades the X girls cheat less on the school tests than the non-X girls, and the difference is 2.65 times its SD.

5. The grand totals for all grades and both sexes show a difference of .045 (CT ratio) in favor of the X group. This difference is 4.3 times its SD.

Table CLIII compares the 4 A and 4 B groups by schools. It shows that the 4 B's in all schools except D (a non-X school) cheat more than the 4 A's, who are just entering. In the case of the X group this difference is slightly greater and more significant than in the case of the non-X groups.

TABLE CLIII

COMPARISON OF 4 A AND 4 B GROUPS IN SAME SCHOOLS

School	All Tests — CT Ratio					
	4 A, Entering		*4 B, One Term or More*			
	Mean	N	Mean	N	Difference	D/σ_D
A X	.314	44	.384	17	.070	
B X	.469	68	.589	14	.120	
C Non-X	.440	35	.630	40	.190	
D Non-X	.510	50	.470	60	.040	
All X	.408	112	.476	31	.068	1.7
All non-X	.481	85	.534	100	.053	1.5

Table CLIV deals only with X groups and compares them by ranks in the organization. This table shows that there is no consistent decrease in the amount of deception as progress is made up through the ranks of the organization. Indeed, the tendency is frequently the other way. In school A the six-star group are the heaviest cheaters. This is also true of the B 5–6 group. In the home test the five- and six-star group of school A are less deceptive than the rest, but the three- and four-star group are more deceptive than the rest. In school B, no great changes are noticeable.

TABLE CLIV

Comparison of the Different Ranks in the X Organization

Rank	All Tests — CT Ratio											
	AX 5–6		*AX 7–8*		*AX Total*		*BX 5–6*		*BX 7–8*		*BX Total*	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
Entering	.376	22	.450	10	.400	33	.637	108	.672	44	.605	152
No rank	.400	161	.530	111	.397	272	.539	101	.511	37	.545	138
1 star	.420	64	.466	48	.448	112	.410	43	.422	47	.410	90
2 stars	.433	48	.505	49	.469	97	.587	23	.525	27	.509	50
3 stars	.400	21	.557	42	.494	63	.665	19	.430	6	.500	25
4 stars	.365	26	.450	20	.404	46						
5 stars	.350	21	.485	10	.388	32						
6 stars			.550	12	.550	12						

Rank	Home Test — Per Cent Cheating											
	AX 5–6		*AX 7–8*		*AX Total*		*BX 5–6*		*BX 7–8*		*BX Total*	
	%	N	%	N	%	N	%	N	%	N	%	N
No rank	31	148	54	108	40	256	44	100	67	42	51	142
1 star	32	56	35	48	34	104	42	93	47	34	43	127
2 stars	34	47	46	48	40	95	40	40	51	43	48	83
3 stars	53	19	51	39	52	58	44	23	61	26	53	49
4 stars	37	27	68	19	51	45	63	8	47	19	52	27
5 stars	14	21	50	10	26	31						
6 stars			33	12	33	12						

Table CLV compares the X group in respect to terms spent in the organization, a term being a period of twelve weeks. This table confirms Table CLIV and shows a positive correlation between length of time in the system and deception, *i.e.*, the longer they have been enrolled, the more they tend to cheat.

TABLE CLV

COMPARISON OF GRADES AND SCHOOLS BY NUMBER OF TERMS SPENT IN X ORGANIZATION

TERMS	ALL TESTS — CT RATIO											
	School A						*School B*					
	Grade 5–6		Grade 7–8		Total		Grade 5–6		Grade 7–8		Total	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
6			.513	97	.515	97						
5	.437	48	.457	29	.447	77			.658	26	.657	26
4	.345	79	.565	26	.448	105	.476	38	.568	67	.508	105
3	.393	70	.497	51	.431	121	.384	74	.487	35	.417	109
2	.417	75	.529	34	.430	109	.627	133	.583	30	.622	163
1	.410	42	.465	27	.440	69	.499	41	.493	14	.550	57
0	.464	14	.436	28	.450	102			.433	6	.433	6
	HOME TEST — PER CENT CHEATING											
TERMS	*School A*						*School B*					
	Grade 5–6		Grade 7–8		Total		Grade 5–6		Grade 7–8		Total	
	% C's	N	% C's	N	% C's	N	% C's	N	% C's	N	% C's	N
6		1	62	93	63	94						
5	42	48	46	28	43	76			65	23	65	23
4	33	73	61	26	40	99	64	36	59	66	61	102
3	35	63	37	51	36	114	35	69	51	33	40	102
2	37	71	42	31	38	102	44	122	64	28	48	150
1	18	38	28	29	22	67	29	35	42	12	32	47
0	8	13	41	17	27	30	0	2	40	5	29	7

Table CLVI combines Tables CLIV and CLV and shows the ratio of ranks to terms and the amount of deception by these ratios. This table shows that those who make normal progress of one rank per term cheat the least of all, and that cheating increases toward each extreme, with those making the most rapid progress, *viz.*, two stars per term, cheating the most.

TABLE CLVI

COMPARISON OF SCHOOLS BY RATE OF ADVANCEMENT IN X ORGANIZATION

RATE OF PROGRESS	ALL TESTS — CT RATIO					HOME TEST — PER CENT CHEATING				
	A		*BX*		*All X*	*A*		*BX*		*All X*
	Mean	N	Mean	N	Mean	Mean	N	Mean	N	Mean
2 stars per term	.58	17	.58	22	.58	55%	18	66%	3	57%
1½ stars per term	.47	12	.66	12	.56	42	12	48	31	47
1¼ stars per term	.47	19	.47	15	.47	50	20	72	7	56
1 star per term	.36	80	.41	42	.38	31	70	45	58	38
¾ star per term	.41	88	.43	56	.42	51	82	53	58	52
½ star per term	.50	80	.58	97	.54	36	95	48	126	43
¼ star per term	.47	64	.55	100	.51	47	45	54	13	48
No stars per term	.46	210	.68	49	.57	47	172	55	111	50

Table CLVII shows coefficients of correlation between age, time enrolled in the school, and cheating. These *r*'s are all either zero or within the limits of four times their PE's of zero.

TABLE CLVII *

CORRELATIONS BETWEEN AGE, LENGTH OF TIME IN EACH SCHOOL, AND DECEPTION, ON SCHOOL POPULATIONS MATCHED FOR AGE

SCHOOL	r_{AT}	r_{AC}	r_{AH}	r_{TC}	r_{TH}	$r_{TC.A}$	$r_{TH.A}$
A	.058	.007	.298	.055	.121	.055	.108
B	.136	.177	.046	.158	.026	.137	.019
B		.267	.166				
C and D	.031	.391	.091	.032	.100	.022	.097

* r_{AT} is the correlation between age and time in school.
r_{AC} is the correlation between age and cheating on all tests.
r_{AH} is the correlation between age and cheating on the home test.
r_{TC} is the correlation between time in school and cheating on all tests.
r_{TH} is the correlation between time in school and cheating on home test.

Conclusions based on the foregoing data are given in Chapter XVIII, Book One, and will not be restated here.

SYSTEM Y

The method called Y is described in Chapter XIX of Book One, where the main conclusions are stated. The data are given in some detail here. Tables CLVIII and CLIX refer to populations A and C.

Table CLVIII shows that what little difference there is between those in system Y and the other group is not in favor of the Y's.

TABLE CLVIII

System Y, Population A

	Y Boys		Y Girls		Whole Population	
	Median	N	Median	N	Median	N
Age	13.0	85	12.6	56	12.0	560
CAVI score . .	106	76	98	54	97	
IER school Xi .	− 3.6	76	− 3.1	50	− 3.20	
IER home Xi . .	− 2.0	59	− 1.4	47	− 1.90	
% school cheaters	52				46	
% home cheaters	45				32	

TABLE CLIX

Comparing Y's and Others in Population C

	Y Boys, N = 92	Total, N = 600
	Median	Median
Age	12.6	12.0
CAVI score	112	107
School test Xi score . .	− 5.92	− 6.40
School test % cheaters .	61%	75%
Home test % cheaters .	64%	48%
Cheaters on all tests . .	63%	63%

Table CLIX also shows no significant differences between system Y and others.

Tables CLX to CLXIV* refer to population E, where special data were available on the Y organization. Table CLX compares a group of Y's and a group belonging to no organization, keeping the mean ages and IQ's of the two groups about the same. The table shows the significance of the differences in deception scores on the Speed and Coördination tests.

TABLE CLX

Boys Belonging to Y and No Organization Matched for Age and IQ, Population E

	Y's			No Organization			
	N	M	SD	N	M	SD	D/σ_D
CA . . .	85	13/6.3	12.4	85	13/6.8	12.2	.27
IQ . . .	85	108.9	17.5	85	109.5	17.9	.24
Speed . . .	84	31.25	27.5	84	36.9	29.4	1.7
Coördination	83	42.45	15.9	83	43.5	15.6	.42

Table CLXI compares all boys with Y's, with those belonging to organizations other than Y, and with those belonging to no organization, with respect to age, IQ, Speed deception scores, and Coördination deception scores. There are very slight differences in deception in favor of the Y's.

TABLE CLXI

Comparison of Y's and Non-Y's in CA, IQ, and Deception

	All Boys			Y's			Other Organizations			No Organization		
	N	M	SD	N	M	SD	N	M	SD	N	M	SD
CA . . .	352	13/3.7	1/3.5	150	13/7.4	1/1	22	13/5.8	1/4.7	180	12/11.3	1/1.3
IQ . . .	250	110.6	16.3	117	109.9	19.7	19	110.9	17.2	124	106.5	17.8
Speed . .	356	30.9	27.2	150	30.5	26.1	22	25.05	15.7	184	31.95	28.9
Coördination	352	44.15	16.7	151	42.2	15.9	21	39.15	12.6	180	46.4	17.2

---

* The scores reported are gross amounts, not Xi's, and minus signs are omitted.

Tables CLXII, CLXIII, and CLXIV refer to rank in the order, length of time in the order, and rate of progress respectively. They show no consistent deceptive differences in relation to rank; but those who have been two or three years in the organization cheat less than those who have been in one or four.* Table CLXIV shows no relation between rate of progress and deception.

TABLE CLXII

Deception and Rank in Y

	Lowest			Middle			Highest		
	N	M	SD	N	M	SD	N	M	SD
Speed . . .	56	29.0	25.9	44	26.9	21.9	14	33.3	12.5
Coördination	59	41.7	14.9	44	41.1	16.4	13	31.3	12.6

TABLE CLXIII

Deception and Time in Y

	1 Year			2 Years			3 Years			4 Years or More*		
	N	M	Median	N	M	Median	N	M	Median	N	M	Median
Speed . .	28	35.5	24.5	53	23.5	22.0	26	24.0	21.0	7	32.0	27.0
Coördination	28	48.5	51.0	54	40.0	41.2	26	32.0	29.0	8	52.5	52.0

TABLE CLXIV

Deception and Rate of Progress in Y in Ranks per Term

	1/5			1/4, 1/3			1/2, 3/4			1, 1½, 2		
	N	M	Median	N	M	Median	N	M	Median	N	M	Median
Speed . .	10	19.5	21.0	39	22.0	21.5	42	33.5	26.0	22	24.0	21.5
Coördination	12	41.5	38.3	42	39.5	40.0	40	40.0	43.6	22	42.0	51.0

---

* Since the data are from grades seven to nine, those who have been four years or more in the organization are retarded, which may account for their greater deceptiveness.

DATA ON EFFORTS TO TEACH HONESTY

Tables CLXV to CLXVII present the main facts concerning an experimental effort to teach honesty. The experiment is described in Chapter XX, Book One. There were three experimental groups and three control groups. Each had the Speed and Coördination tests. The means in the tables show the scores made by each group before and after the period of training. The difference between the means and the ratio of these differences to their SD's are shown. A column showing the probability of a difference greater than zero in the direction of the obtained difference occurring in 1000 such samples is also given. The mean age, IQ, and Sims score for each group are given in Table CLXVII.

The tables show constant decrease in Speed deception after training for both experimental and control groups, but show constant increase after training for both groups in the Coördination tests. These results are discussed in Chapter XX, Book One.

TABLE CLXV

Results of an Effort to Teach Honesty — Speed Tests
(Raw Scores)

Group	N	Mean Before	Mean After	Difference	D/σ_D	Probability*
Experimental 1	29	36.60	25.40	− 11.20	2.51	994.00
Control 1	34	22.70	25.50	+ 2.80	0.59	723.00
Experimental 2	20	31.50	6.00	− 25.50	13.30	999.99
Control 2	10	44.00	26.60	− 17.40	2.95	998.00
Experimental 3	28	47.10	36.95	− 10.15	1.92	973.00
Control 3	23	27.75	17.55	− 10.20	2.44	993.00
All experimental . . .	77	39.25	24.55	− 14.70	4.40	999.99
All control	67	27.65	22.55	− 5.10	1.70	956.00

* The probability column gives the chances in 1000 that the difference between the means of similar samples will be greater than zero and in the direction indicated by the sign in the difference column.

TABLE CLXVI

RESULTS OF AN EFFORT TO TEACH HONESTY — COÖRDINATION TESTS (RAW SCORES)

GROUP	N	MEAN BEFORE	MEAN AFTER	DIFFERENCE	D/σ_D	PROBABILITY*
Experimental 1	31	28.65	26.70	− 1.95	0.60	726
Control 1	31	27.00	31.55	+ 4.55	1.24	893
Experimental 2	23	25.75	27.95	+ 2.20	0.51	695
Control 2	13	17.50	21.75	+ 4.25	1.29	902
Experimental 3 . . .	30	30.85	33.35	+ 2.50	0.64	739
Control 3	20	33.75	35.50	+ 1.75	0.33	629
All experimental . . .	84	28.65	29.40	+ 0.75	0.34	633
All control	64	27.35	30.80	+ 3.45	1.21	887

* The probability column gives the chances in 1000 that the difference between the means of similar samples will be greater than zero and in the direction indicated by the sign in the difference column.

TABLE CLXVII

MEAN AGES, IQ'S, AND SIMS SCORES OF EXPERIMENTAL AND CONTROL GROUPS

	MEAN AGE	MEAN IQ	MEAN SIMS SCORE
Experimental 1	14/4.8	118.40	14.14
Control 1	14/3.7	111.60	13.81
Experimental 2	12/4.4	115.50	14.33
Control 2	13/6.1	112.75	14.20
Experimental 3	12/11.4	120.90	15.22
Control 3	12/6.0	113.70	14.73
All experimental	13/3.8	118.35	14.55
All control	13/6.8	112.55	14.25
Difference	0/3.0	5.80	.30
D/σ_D	1.38	2.47	.92

CHAPTER XII

DATA ON THE SPECIFICNESS OF CONDUCT, ATTITUDES, AND MOTIVATION

THE SPECIFICITY OF CONDUCT

In Chapter XXI of Book One we presented the thesis that an individual's honesty or dishonesty consists of a series of acts and attitudes to which these descriptive terms apply. The consistency with which he is honest or dishonest is a function of the situations in which he is placed in so far as (1) these situations have common elements, (2) he has learned to be honest or dishonest in them, and (3) he has become aware of their honest or dishonest implications or consequences. The data supporting this doctrine of specificity of conduct will be summarized here. Three sets of facts are presented:

1. Correlations between tests
2. Comparison of tests with respect to amounts of cheating
3. The distribution of cheating scores

A. Correlations between Tests

The argument from test intercorrelations is that there is a direct relation between the size of the correlation and the number of elements common to the two situations which the tests represent. Hence test scores in two situations are similar because of common elements in the situation rather than because of a common bond of honesty in the subject. The facts are as follows:

1. When identical tests were repeated under conditions as nearly the same as possible and after a period of one week, the average correlations between the first cheating scores and the

second were .569 for the Speed tests and .566 for the Coördination tests.* See Table LXX, Chapter XXI, Book One.

2. When two tests given on the same day, based on the same testing technique but employing different material, were correlated, the average *r*'s between one test and another were .440 for Speed and .462 for Coördination. See the bold-faced figures in Table CLXVIII.

3. When one test representing one type of test situation was correlated with one test representing a different situation, the correlations ran from + .400 to − .003, depending on the situations and what they had in common. See the upper right-hand section of Table CLXVIII.

TABLE CLXVIII †

AVERAGE CROSS-CORRELATIONS BETWEEN SINGLE TESTS OF DIFFERENT TECHNIQUES

	A	B	C	D	E	F	H	I
A IER	**.696**	.292	.285	.291	.154	.198	.127	.312
B Speed	.527	**.440**	.219	.255	.141	.194	.128	.254
C Coördination	.504	.486	**.462**	.196	.187	.062	.160	.161
D Puzzles	.494	.543	.407	**.500**	—	.184	.283	.208
E Home	.377	.437	.561	—	**.240**	.087	− .010	.400
F Contests	.272	.334	.104	.297	.203	**.458**	.162	− .003
H Money	—	—	—	—	—	—	—	.132
I Lying	.408	.407	.260	.321	—	− .004	—	**.836**

† This table reads: One IER school test will correlate on the average .696 with one other IER test; one IER school test will correlate on the average .292 with one Speed test; .285 with one Coördination test; .291 with one Puzzle test, etc.

The coefficients in the lower left section represent their respective counterparts in the upper right corrected for attenuation by the formula

$$R = \frac{r_{12}}{\sqrt{R_{11}R_{22}}},$$

where r_{12} is an r in the upper right and $R_{11}R_{22}$ are the corresponding average inter-*r*'s on the diagonal.

---

* The IER tests were repeated under such unfavorable conditions that the data are not given here.

4. If we had perfect measures of cheating in the test situations used in this inquiry, the correlation between cheating in one and cheating in another would run from $- .004$ to $+ .561$, as shown in the lower left-hand section of Table CLXVIII, where the r's are the respective counterparts of the r's of the upper right-hand section corrected for attenuation.

First consider the correlations down the diagonal from the upper left to the lower right. Each of these is the average inter-r of the different tests of that type of deception. For example, the average inter-r of the three IER school tests is .696; of the six Speed tests is .440; of the three Coördination tests, .462; etc. Deception on the IER school tests consists in copying answers from a key or answer sheet. The correlation of .696 between the deceptive score of these tests is not high enough to enable one to predict scores from one to another. But the coefficient of correlation does not tell the whole story. As we shall presently see, there is considerably more cheating on the Arithmetic test than on either of the others. So cheating on the Completion test is more indicative of cheating on the Arithmetic test than *vice versa*.* Thus we see that deceit by copying from a key while taking a test fluctuates more or less from one test to another and from one occasion to another on the same test.

Consider next the inter-r's of the four types of classroom deception. Table CLXVIII shows that a single IER school test (copying from a key) will correlate on the average .292 with a single Speed test (adding answers), .285 with a single Coördination test (peeping), and .291 with a single Puzzle test (faking a solution). The average of the six correlations representing the interrelation of the four classroom tests is .256. Now we see that copying from a key on one test will correlate .696 with copying from a key on another test; and adding on more scores deceptively on one Speed test will correlate .44 with another Speed test; but copying from a key on one test will correlate only .292 with adding on more scores on a Speed test. In general, we note that correlations on the diagonal are higher than their counterparts in the upper right section of the table. This means that in each kind of deception the correlation between one test and another is higher than between one kind of deception and another.

---

* This does not necessarily imply that the regression lines are not linear.

Consider next the correlation between the home test and the classroom tests. Column E of the table shows that the home test correlates .154 with a single IER copying test; .141 with a single Speed (adding on) test, and .187 with a single Coördination (peeping) test. The average of these three is .160, which is entirely too low for any kind of prediction and which is much lower than the average of the classroom tests, .256. To summarize again, we have this situation: One classroom deception test will correlate from .44 to .59 with another of the same kind; .256 with another of a different kind; but only .16 with a home test.

Consider next the question of stealing. The correlations between stealing and the cheating tests are in column H. The average of these r's is .141, and the correlation between one stealing test and one lying test is .132. So stealing money in the situation described in Chapter III of Book One correlates almost zero with both lying and cheating in the test situations used.

Column I shows the correlations between the lying test and cheating. They run all the way from zero to .40. It will be recalled that this test consists of certain statements about the child's conduct. Deception consists in falsifying the record (the subject making himself appear more honorable than he really is). This is much the same sort of thing as certain types of cheating.

This suggests a clue to the whole matter. The r's perhaps signify in each case the extent to which the situations have elements in common. There is much in common between any two IER tests or any two Speed tests. The only differences are differences in material. But the Speed and IER tests differ from each other not only in the nature of the material but also in the opportunity to deceive. There is less in common between them. There is still less in common between the classroom situation and the home situation. Thus the correlation between two deception tests depends on the common elements between the two situations. If they have nothing in common, the correlations will be zero.*

B. COMPARISON OF TESTS WITH RESPECT TO AMOUNTS OF CHEATING

The argument is that, if honesty were a consistent virtue and dishonesty a consistent vice, the amount of cheating in different test situations would be about the same. The facts are as follows:

1. Tests repeating different test situations elicit different amounts of cheating. See Table CLXIX, below.

2. Tests representing the same type of test situation but using different material do not show as wide differences as tests representing different situations; yet these show differences that are statistically significant. See Tables CLXX and CLXXI.

TABLE CLXIX

COMPARISONS OF AMOUNTS OF CHEATING, BY TECHNIQUES

SECTION I					SECTION II				
Population	Mean School Xi	Mean Speed Xi	N	D/σ_D	Population	Mean School Xi	Mean Contest Xi	N	D/σ_D
A	− 3.74	− 1.16	408		A	− 4.07	− 2.47	97	
C	− 3.46	− 2.05	136		C	− 4.33	− 1.45	126	
P	− 1.11	− .46	163			− 4.21	− 1.90	223	14.00
R	− .80	+ .16	123						
	− 2.74	− .97	830	12.3					

SECTION III					SECTION IV				
Population	Mean School Xi	Mean Home Xi	N	D/σ_D	Population	Mean School Xi	Mean Coördination Xi	N	D/σ_D
BC PQ	− 2.50	− 2.61	890	1.00	LM	− 3.12	− 4.50	244	4.6

---

* Spearman's criterion of the presence of a common factor was not applied to these inter-r's, as they were not obtained from the same cases throughout.

TABLE CLXIX — *Continued*

SECTION V

Population	Mean Speed Xi	Mean Home Xi	N	D/σ_D
ACP	– 1.00	– 2.35	417	8.4
J	– 2.66	– 2.62	510	.5
F–I	– 4.05	– 2.75	450	3.4

SECTION VI

Population	Mean Speed Xi	Mean Coördination Xi	N	D/σ_D
F–I	– 4.05	– 7.00	450	12.8
J	– 2.66	– 5.41	497	17.0
LM	– .26	– 5.10	344	25.2

SECTION VII

Population	Mean Speed Xi	Mean Puzzle Xi	N	D/σ_D
D	– 3.97	– 1.66	180	9.00
R	– .37	– 1.00	150	3.37

SECTION VIII

Population	Mean Speed Xi	Mean Contest Xi	N	D/σ_D
A	– 2.11	– 2.21	127	0.5
C	– 2.63	– 1.43	191	5.5
D	– 3.92	– 2.08	218	6.7

SECTION IX

Population	Mean Coördination Xi	Mean Home Xi	N	D/σ_D
J	– 5.41	– 2.78	497	16.7
F–I	– 7.00	– 2.75	450	25.0

SECTION X

Population	Mean Speed Xi	Mean Home Xi	N	D/σ_D
AC	– 1.90	– 2.81	222	4.07

ORDER

Coördination
School Xi
Home Xi
Speed
Contests
Puzzles

Section I of Table CLXIX compares the mean amounts of cheating on the IER school tests with mean amounts on the Speed tests. Here we note that there is very much more cheating on the IER tests than on the Speed tests. The difference between the means of all populations combined is 12.3 times its SE. A perusal of the table will show that there is more cheating on the Coördination tests than on any of the others, that the IER school tests are next, the home test next, and then Speed, Athletic Contests, and Puzzles. The Coördination tests present an interesting situation. Here the difference between deception and honesty is that of merely opening the eyes or keeping them closed. The temptation to peep is great and the resistance is low. Hence the high degree of peeping. Tables LII to LVII in Chapter IV show that the percentage of children who cheat on this test in any classroom group will run usually from 75 to 100. Contrast this with the Speed tests, on which (according to section VI of Table CLXIX) there is about half as much cheating. The situation is different, in fact almost totally different. The only thing in common is that both are classroom paper-and-pencil tests given under much the same conditions. But the temptation to cheat is either less or the resistance is greater. Comparisons between other techniques are made in the different sections of the table and show in most cases that there are significant differences between amounts of cheating.

Comparison of the different amounts of cheating on the different tests of the same technique is instructive. Table CLXX compares the three Coördination tests.

Here we note that there was more cheating on the Mazes test than on either of the other two. This may be due in part to the fact that in the case of the Squares test the pupils reached the top of the test more quickly than in the case of the other two. But the difference between the mean score obtained on the Circles test and the maximum possible score is 6.87 sigma, showing plenty of room for more cheating; and the difference in the case of the Mazes is 3.60 sigma. So they jammed the top more in the Mazes than in the Circles. Evidently there is something in the nature of the test situation that provokes more cheating on the Mazes test. It may be more tantalizing.

We have here three tests representing almost identically the same situation. They differ only in the fact that in one case the child places a pencil mark in a circle and in the other threads a maze. Yet maze-threading provokes more cheating. Why? The only reason we can see is that there is something in the situation itself that does it. The point is that deception is a mat-

TABLE CLXX

COMPARISON OF COÖRDINATION TESTS

	SQUARES			CIRCLES		MAZES	
SCHOOL	N	Mean Xi	SD*	Mean Xi	SD*	Mean Xi	SD*
F	521	−5.51	2.0 Xi	−6.23	4.0 Xi	−5.63	2.0 Xi
G	362	−5.11		−4.78		−5.67	
HI	756	−4.98		−5.43		−5.46	
J	740	−4.16		−4.75		−4.98	
Total	2379	−4.86		−4.98		−5.40	
Maximum Xi		−5.44		−9.60		−6.50	
Maximum mean		.58		4.62		1.10	
Xi deviation of obtained mean from maximum score		2.52 Xi		6.87 Xi		3.60 Xi	

* These SD's are not exact determinations but are estimates and purposely put a little high. The true SD's are smaller.

ter of the nature of the situation as much as, if not more than, the nature of the child.

The Speed tests bear out the argument. Table CLXXI compares the six Speed tests for amounts of cheating in seven populations. When all seven populations are combined (1971 cases), we get significant differences between all tests except tests 2 and 3. In four out of the seven populations there is much more cheating on the Dots test, probably because it is easier to add dots than to cross out more A's or to put in more digits for the symbols, etc.

Tables CLXX and CLXXI fully demonstrate the point that slight differences in the test situation will produce significant differences in the amount of cheating. The greater the difference in the situations, the greater the difference in amount of cheating and the lower the correlations between cheating tests. The differences shown in Table CLXIX between techniques are much larger than the differences between different tests of the same technique as shown in Tables CLXX and CLXXI.

TABLE CLXXI

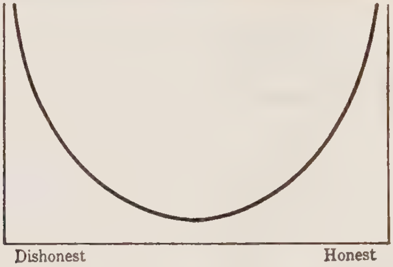
Comparison of Speed Tests, Grades Five to Eight

Population	N	Test 1, Additions	Test 2, Pairs Number Checking	Test 3, Cancellation of A's	Test 4, Digit Symbols	Test 5, Dots	Test 6, Cancellation of Digits (4's)
A	763	Mean − 0.23	− 0.58	− 0.84	− 0.26	− 0.45	− 1.16
		SD 2.0	2.5	3.2	1.6	2.0	3.0
C	237	Mean − 1.35	− 1.37	− 1.34	− 1.32	− 1.75	− 1.11
		SD 3.5	3.6	3.2	2.4	2.9	2.5
D	259	Mean − 1.76	− 2.06	− 1.52	− 1.71	− 3.50	− 2.46
		SD 3.2	2.6	3.2	2.4	3.8	3.2
E (1st day)	158	Mean − 0.38	− 0.62	− 0.39	− 0.41	− 0.25	− 0.68
		SD 1.2	1.5	1.4	1.0	1.4	1.2
P	228	Mean + 1.45	− 0.18	+ 0.01	− 0.05	− 0.37	− 1.03
		SD 1.8	1.5	2.8	1.0	1.3	2.4
R	167	Mean − 0.57	− 0.82	− 0.62	− 0.40	− 0.49	− 0.26
		SD 2.6	2.4	2.5	1.8	2.3	1.5
U (1st day)	159	Mean − 0.45	− 0.69	− 1.47	− 1.27	− 1.88	− 1.68
		SD 1.9	2.3	2.8	2.7	3.5	2.8
Total	1971	Mean − 0.43	− 0.85	− 0.89	− 0.66	− 1.10	− 1.24
		SD 3.2	3.4	3.2	2.6	3.6	3.2

All differences significant except between tests 2 and 3.

C. The Distribution of Cheating Scores

The argument is as follows: If honesty is a unified trait, then a child is either honest or dishonest on all situations. That is, the intercorrelation between test situations would be positive and high. If this were the case, the distribution of the fact scores, *i.e.*, the CT ratio, would be U-shaped, or bimodal, like this:



The facts are shown in Table CLXXII and in Figure 94 of Chapter XXI, Book One. Aside from a small piling up at the honest end of the scale, the distribution approximates the well-known normal frequency curve.

In populations C and L–M the distributions are skewed, but for populations D and F to J the distributions are more symmetrical.

TABLE CLXXII

DISTRIBUTION OF CHEATING RATIOS

RATIO	POPULATION				TOTAL	PER CENT
	C, 12–15*	D, 18*	L–M, 11*	F–J, 10*		
1.00	2	1		75	78	3.2
.90	2	9	2	92	105	4.3
.80	1	13	4	160	178	7.3
.70	9	34	6	182	231	9.4
.60	19	39	7	187	252	10.3
.50	29	49	15	215	308	12.6
.40	19	25	48	218	310	12.7
.30	36	37	95	271	439	17.9
.20	30	20	58	123	231	9.4
.10	35	16	33	56	140	5.7
0	41	6	79	45	171	7.0
	223	249	347	1624	2443	
Mean	.340	.523	.291	.562	.500	

* Number of opportunities.

When all populations are combined, the resulting distribution is shown in the column headed " Total." In the column headed " Per Cent " are the percentage frequencies of the totals. This column shows that 3.2% of the total population of 2443 cheated at every opportunity and 7.0% cheated not at all. Thus we have 10.2% * of the total number approximating a unified trait or consistent tendency either to cheat or not to cheat. The other 90% cheated all the way from once to nine times in every ten opportunities.

Another interpretation of these facts might be that all possess a trait of honesty, but in varying degrees. Those who cheat not at all have the *maximum* of it, and those who cheat ten times in ten opportunities have the *least* of it. As was pointed out in Chapter XXI, Book One, such varying degrees of a trait would not result in a unimodal distribution unless the test situations can be scaled. But the situations represented in the CT ratio cannot be scaled, so that the shape of the distribution cannot be explained in terms of the trait theory.

THE SPECIFICITY OF ATTITUDES

Attitudes toward cheating, as measured by the resistance that will be overcome in order to cheat, are probably just as specific as cheating itself. The evidence for this is found in an article by the authors, " First Steps toward a Scale for Measuring Attitudes," † reported here with certain modifications and omissions.

By virtue of past experiences, or heredity, or both, the individual may be more or less permanently predisposed to make an honest or dishonest response in situations involving this type of conduct. Here is a man faced with a mass of figures representing his income for the year of 1926. If his neural mechanism is set or predisposed to facing the facts regardless of cost or consequence, he will be more likely to make an honest return than he would be if his neurones were set in the direction of shading the truth or " doctoring " figures so that the result will be favorable to himself. His behavior, however, is not totally determined by his attitude on the question of honesty. Other powerful but more temporary sets may operate. For the purpose of further discussion let us call the permanent sets " attitudes " and the temporary sets " desires." In order to test the attitudes, the desires must be kept constant. Accordingly the test scale must consist of a series of situations in which behavior is demotivated as far as possible.

---

* Nearly half this number are from the L–M population, which had only 11 chances and was the most honest of those reported in Table CLXXII.

† *Journal of Educational Psychology,* March, 1926. Used with the permission of the publisher.

With these conditions in mind, let us endeavor to construct a scale for measuring the attitudes of school children toward cheating on examinations. Assume that by the time a child reaches the fifth grade he has more or less permanent sets or attitudes toward cheating in school work. He may be set against it, or be in favor of it, or be neutral toward it.*

We are assuming that these sets are variables and that they run from neutrality to all degrees of *pro-ness* in one direction and in the opposite direction to all degrees of *anti-ness.* At one end are those who cannot help cheating. At the other end are those who are " dead set " against it. We are proposing, then, to test the varying degrees of *pro* attitude by the resistance overcome in order to cheat and the degrees of *anti* attitude by the strength of the motive it takes to induce cheating. The first step is to set up a kind of middle situation which will separate the *pros* from the *antis.* This situation should be so arranged that it will be clear to the child that nothing will be gained or lost by cheating, and that if he cheats no one will know it and if he is honest no one will know it. Cheating here should be relatively easy. The situation should then contain these elements.

1. Cheating is very easy, in fact so easy that it requires less mental effort to cheat than to be honest.

---

* It may be true that no child is set directly in favor of cheating as an end in itself. The set or predisposition may always include a drive toward the thing that cheating will secure. In any case his attitudes are such as to favor a cheating response.

2. There is nothing to be gained from cheating.
3. There is nothing to be lost by it.
4. There is no apparent chance of anyone's knowing whether cheating has taken place or not.

It is assumed that those who cheat under these conditions have a tendency toward it, and that those who do not cheat have a tendency against it or else are neutral. From this middle point, therefore, the scale is constructed. By keeping all aspects of this general situation constant except the first element, that of difficulty of cheating, the scale roughly measures pro-cheating attitude. By keeping the entire situation constant and by adding on a series of constant motives, the scale measures the anti-cheating attitude.

One of the scales with which we have been working consists of seven steps, five *pro* and two *anti*. Beginning at the extreme of the *pro* attitude the steps are defined by the behavior of the children on the following tests, which are illustrated in Book One, Chapter III.

1. An Information test * consisting of 28 items steeply graded in difficulty. Instead of underlining the correct answer, the pupil is required to encircle it in *ink*. He is told to guess if he does not know. In fact, he is not allowed to hand in his paper until he has guessed at every answer. These papers are taken to the office, where a duplicate of each is made. A day or so later the original papers are returned to the children with answer sheets, and they are instructed to grade their own papers. Each child has previously been supplied with an ink eraser in connection with his school work. In order to cheat on this test, it is necessary for the child to erase a circle drawn in ink and make another. This is rather difficult. It is not easy to make a clean job of it. By comparing the corrected paper with its duplicate in the office, it is possible to see how much cheating has gone on.

2. An original Disarranged Sentence test requiring the use of pencil. The task is to straighten out mixed-up words so that they will make a sentence. In case the child finds one too difficult —

---

* The material for tests 1, 4, 6, and 7 was furnished by the Institute of Educational Research, Teachers College, Columbia University.

and they are sharply scaled in difficulty — he is required to draw a line through the blank space to indicate that he has definitely given up and omitted it. When the papers are redistributed with answer sheets, cheating is accomplished by erasing a whole sentence written in pencil. This is easier to do than to erase a circle made in ink. Consequently a greater percentage cheat on test 2 than on test 1.

3. The Thorndike-McCall Reading Scale. The same procedure is used here as for test 2. Cheating is done by changing one or two words — sometimes a whole phrase — and by adding answers. Pencils are used.

4. A Sentence Completion test. Cheating here consists in either adding on more words, that is, doing more items, or in changing the words previously written, by erasing and rewriting.

5. An original Spelling test. It is made up of 90 words, some of which are misspelled. The task is to check the misspelled words. This test represents the *very easy* level of cheating. All the child has to do is to add more check marks or erase those previously made. It is very easy to erase a check mark. This test is intended to strike in at about the neutral level outlined above. Cheating on it is easy, and as far as we know no child has suspected that we keep check on the amount of cheating. It is not directly motivated although there is, of course, such habitual motivation as is involved in routine school work.

6. A Word Knowledge test, given with slight motivation, and therefore on the *anti* side of the neutral point. This is arranged as a multiple choice test. The response words to each stimulus word are numbered 1 to 5. The task is to find the correct response word and write its number on the dotted line in the margin. This makes cheating easier than it would be if the response word were underlined. Motivation is provided by writing the norms for the grade concerned on the board. This sets a goal to work toward.

7. An Arithmetic test, the answers being written at the right margin. The only essential difference between this and test 6 is that the children are told that this will count in their monthly standing.

To summarize, we have the following series of difficulties on the *pro* end of the scale:

1. To erase a circle in ink and add another
2. To erase a sentence in pencil and add another
3. To erase a phrase of two or more words or add more words
4. To erase a single word or add a single word
5. To erase a check mark or add a check mark

On the *anti* end of the scale:

6. To erase a digit or add a digit. *Motive:* The norms visible on the blackboard

7. To erase an arithmetic answer or part of it or to add an answer. *Motive:* Norms visible on blackboard and an oral statement that this test will count *

A. CRITERIA FOR EVALUATING THE SCALE

The statistical requirements of the proposed scale may be summarized as follows:

1. It should present a series of situations calling for behavior in which cheating is possible and not likely to be discovered.

2. The motives for cheating which are introduced at the *anti* end of the scale should be connected with tests all of which are neutral in difficulty.

3. The steps on the scale should be approximately equal and in multiples of some unit of measurement.

4. The scale should have as a zero point either an absolute zero or an arbitrary point of reference.

---

* While it is true that the behavior listed as 1 to 7 above is ordinarily regarded as cheating, we do not wish to place on it any label connoting moral qualities in advance of further proof. Perhaps the scientific attitude is best expressed by using some colorless label having no condemnatory connotations. We suggest, therefore, that this general type of behavior be called just "X", and that if it seems desirable to distinguish between the various kinds, as listed in 1 to 7 above, behavior 1 be called X_1, type 2 be called X_2, and so on. Having made this observation in advance, we really gain nothing by substituting the letter "X" for the word "cheat," or "X-ing" for "cheating" in the subsequent treatment of these tests, provided it is clearly understood that the words "cheat," "cheating," and "cheated" are used merely as descriptive labels and not as interpretative symbols.

5. The limits of the scale should be, on the *pro* end, a point of difficulty where just no one will cheat or where, say, 1 in a 100,000 will cheat; and at the *anti* end, a situation in which 100 per cent or, say, 99,999 in 100,000 will cheat.*

6. The situations should be so arranged that all who cheat at one level will also cheat at all lower or easier levels.

7. As a corollary of 6, all those who cheat at least once should cheat on the lowest level, all those who cheat at least twice on the two lowest, and so on.

8. The obstacles should be of such a nature that they can be overcome merely by the application of time and effort, without regard to intelligence and without the addition of other attitudes.

B. Experimenting with the Scale

We first tried the scale out on a group of 32 public school pupils. This was a 5 A group of bright children. Later we tested a larger group of 263 children in an institution for dependents. These were distributed through grades four to eight. The average IQ of this group was 97. Chronological ages ranged from 8 to 16. Eighty-four per cent made at least one change in their papers.

Table CLXXIII shows the results of the preliminary use of the proposed scale in respect to these 247 children who exhibited the trait in question.

C. Application of the Criteria

The first criterion has been dealt with in describing the tests. The second criterion is not completely met. The difficulty of the Arithmetic and Word Knowledge tests is not neutral. The results show that about the same percentage cheat on the Spelling test, which was not motivated, as on the Arithmetic test, which was. For this reason we combined Arithmetic and Spelling into one step on the scale and placed them at the same level. Thus Table CLXXIII shows six steps instead of seven. Some idea concern-

---

* These are, of course, theoretical limits. No one would care to motivate cheating to a point where 100 per cent would cheat even if this should be possible.

TABLE CLXXIII

Results of Use of Deception Scale

	1	2	3	4	5	6	7	8	9		10
	Information	Disarranged Sentence	Reading	Language Completion	Word Knowledge	Spelling-Arithmetic	Per Cent Not Skipping	Per Cent Skipping	Number of Skips	Per Cent Skipping	Per Cent of Space Filled
	6	6	6	6	6	6	100				100
		22	22	22	22	22	55		0	55	82
		5		5	5	5		10	1	27	
		5	5		5	5		10	2	10	
		4	4	4		4		8	3	8	
		4				4		8			
		3			3	3		6			
		1		1		1		2			
		1	1			1		2			
		45									
			58	58	58	58	68.5		0	68.5	90
			12		12	12		13.5	1	27	
			13	13		13		13.5	2	3	
			2			2		2.5	3	1.5	
			2					1.5			
			1	1				1.0			
			88								
				25	25	25	77		0	77	87
				11		11		19	1	20	
				3				3	2	3	
				1	1			1			
				40							
					35	35	98		0	98	98
					3			2	1	2	
					38						
						30					
	6	51	126	150	175	237				Total	89
Per cent cheating . . .	2	17	43	51	59	80					
Per cent scaled cheaters . .	100	100	86	73	81	96					
	6's	5's	4's	3's	2's	1's					

ing the relative difficulty which each test situation presents may be had by reference to the mean number of changes made on the tests when they were returned to the pupils for scoring. These facts are shown in Table CLXXIV.

TABLE CLXXIV

Mean Number of Changes Made in Scaled Tests

Test	Mean	Median
Information	1.00	
Disarranged Sentence	1.86	0.68
Reading	3.40	2.68
Language Completion	7.30	5.24
Word Knowledge	9.87	6.26
Spelling	11.82	9.20
Arithmetic	6.80	5.04

The fact that the Disarranged Sentence test is harder to cheat on than the Reading test is shown not only by the fact that more pupils cheated on the Reading than on the Disarranged Sentences, but that those who cheated made, on an average, 1.86 changes as against an average of 3.4 changes on the other. In spite of the fact that Arithmetic was motivated most strongly of any, the mean number of changes was 6.80 against 11.82 for Spelling, which was not motivated at all.

Common sense would say that it is easier to change a digit in the Word Knowledge test than to change an answer in the Arithmetic test, which usually involves more than one digit, with other symbols. Now if we place Arithmetic between Completion and Word Knowledge and not ahead of Completion, as the percentage would indicate, and assume that the same number would cheat on it as cheated on the Word Knowledge, then its difficulty becomes 8.4,* which places it at this point.

---

* Number of changes made on Arithmetic (1313) divided by number who cheated on Word Knowledge (156).

This now gives us a fairly good notion of the order of difficulty of these test situations in regard to cheating and indicates that we have now the beginning of a scale.

The third criterion demands that the steps on the scale be equal and preferably in multiples of some unit of measurement. Theoretically we are attempting to measure attitudes toward cheating in terms of the amount of resistance overcome, but we have no units of resistance. All we can do is to fall back on the normal curve and use the SD as our unit. We do this with our eyes wide open to the possible errors involved in assuming a normal distribution of the function we are attempting to test and a random sampling of cases. Perhaps neither of these assumptions is correct, but, as has already been noted, needed changes in them can best be determined by experiment.

The usual procedure is, first, to find the per cent who cheated at each level. We get this from the figures at the bottom of Table CLXXIII. Referring these percentages to the table of probability integrals for the normal curve, we assign each an SD value. Thus 2% cheat on the Information test. There are 2% of cases between 2.06 SD and the end of the normal curve. Thus we say that those cheating on the Information test went beyond the limit of 2.06 SD. Call this + 2.06 SD, to show the direction from the mean. The SD values for all the steps are given in Table CLXXV.

TABLE CLXXV

SD VALUES FOR STEPS OF SCALE

TEST	PER CENT CHEATING	SD	SCALE VALUE
Information	2	+ 2.06	51
Disarranged Sentence	17	+ 0.96	40
Reading	43	+ 0.08	31
Language Completion	51	− 0.28	27
Word Knowledge	59	− 0.64	24
Arithmetic-Spelling	80	− 1.00	20

To get rid of the sign, we assign arbitrary position values to the sigma steps of the normal curve. Calling − 3.0 SD zero and proceeding by giving a value of one for each 0.1 SD, we have:

− 3.0 SD	− 2.5	− 2.0	− 1.5	− 1.0	− 0.5	0.0	+ 1.5	+ 1.0	+ 1.5	+ 2.0	+ 2.5	+ 3.0
0	5	10	15	20	25	30	35	40	45	50	55	60

This gives to the levels shown in Table CLXXV, column 2, the values shown in column 3. On the basis of the assumptions just made, Table CLXXV shows the amount of inequality of the steps.

The fourth criterion requires a zero point either arbitrary or absolute. Assuming that these six steps represent degrees of the *pro* attitude toward cheating, then there ought to be a point where the *pro* attitude becomes neutral or swings over to the *anti*. This would be the theoretical absolute zero. If this point could be satisfactorily located and objectively defined, we could mark off the distance between it and that degree of difficulty where no one will cheat and divide this distance into equal arbitrary units. This would give a scale analogous to the thermometer. In the same way the *anti* attitude would be measured in the other direction. There are two difficulties here. One has to do with defining the neutral attitude;* the other is the annoyance of dealing with minus signs. There is some advantage in having zero at one end of the scale. Our Spelling test, however, is probably near the zero point as defined above, so that, if we wished to use the absolute zero or neutral portion as the point of reference, we should not go far astray if we placed it near the line between the Spelling test and those who did not cheat at all; that is, near − 1.00 SD or what, on the present scale, is called 20.

Table CLXXV shows how well we have met the fifth criterion. Two per cent of our population cheated on the Information test.

---

* For example, actual behavior doubtless involves, in cases near the neutral point, an admixture of both *pro* and *anti* attitudes, the *anti* attitude beginning to operate before the *pro* attitude has reached zero, thus tending to scale off the overt behavior more rapidly than the descending *pro* attitude alone would account for.

Perhaps if we should use a test requiring the erasure of a whole sentence in ink, we should approach the limit demanded by the criterion. As to the other extreme, we have already stated that we do not wish to investigate further in this direction.

The sixth criterion for the scale is that, when a subject cheats on one level of difficulty, he should theoretically cheat on all easier levels. Table CLXXIII shows the facts in regard to this in great detail. The six who cheated on the Information test cheated also on everything else. But of the 51 who cheated on the Disarranged Sentence test, only 28 cheated on all easier levels, 5 skipped Reading, 5 skipped Completions, 4 skipped Word Knowledge, etc. These facts are summarized in the seventh and eighth columns. In respect to this criterion the steps stand in the following percentages of efficiency:

Information	100
Disarranged Sentence	55
Reading	68
Completion	77
Word Knowledge	98

It should be noted that apart from the Information test these percentages grow larger as cheating gets easier. One reason for this is that there are four chances to skip below the level of Disarranged Sentences, which is at a high point on the scale. If a pupil cheats on this test, he may skip any of the four steps below it. There is more opportunity, hence more skipping. On the other hand, those who cheat on the Word Knowledge test have left but one chance to skip. In order to correct for this fact, we have computed for each step on the scale the number of opportunities for cheating below it and used this as a common denominator. For example, on the Disarranged Sentence test there are 51 cheaters, each of whom had 4 opportunities to skip, making a total of 204 opportunities. Now there are actually 36 gaps, which is 18% of 204. Hence, of all the possible gaps, 82% are filled. Our modified judgment of the extent to which the sixth criterion is met is shown by the following corrected percentages of efficiency:

Information	100
Disarranged Sentence	82
Reading	90
Completion	87
Word Knowledge	98

Considering the entire scale in this way, we may compute the ratio of the total opportunities for skipping to the total amount of skipping actually done. This is 89. That is, 89% of the possible gaps are filled. If there were no gaps, the scale would be perfect and the percentage would be 100.

The seventh criterion is not so easily met. If it were a perfect scale, all those who cheated at least once should have done it on the last step; all those who cheated at least twice should have done it on the two easier steps, etc. The proportion actually doing this is shown at the bottom of the table, *viz.:*

Percentage of Those Cheating

At least once who cheat on step 1	96
At least twice who cheat on steps 1 and 2	81
At least three times who cheat on steps 1, 2, and 3	73
At least four times who cheat on steps 1, 2, 3, and 4	86
At least five times who cheat on steps 1, 2, 3, 4, and 5	100
Six times who cheat (necessarily) on steps 1, 2, 3, 4, 5, and 6	100

There remains, then, the eighth criterion, involving the psychological significance of the steps. Does the scale actually represent a graded series of attitudes toward cheating? Specifically, does the fact that a person who will erase ink in order to cheat mean that he is more inclined toward cheating than one who will erase a sentence written in pencil, or does it mean that he is simply more stupid? Or again, is the person who cheats on the Reading test by erasing a phrase more inclined toward cheating than the one who makes various changes in check marks on the Spelling test, or is he simply more interested in reading? Fortunately, we have intelligence test scores on these children, and we can satisfy one part of the criterion by reference to the correlation between IQ and scale score. But first it is necessary to translate the scale into a score in the case of each individual.

D. Scoring the Scale

Finding a satisfactory method of scoring performance scales of this sort has long been a source of annoyance to educational psychologists.* The primary difficulty involved is that of scoring those who skip one or more levels of the scale. If there were no skips, the score would be some value assigned to the highest level reached by the pupil tested. A way of arriving at such scale values is described above, and the results are given in Table CLXXV.

It will be recalled that these values are multiples of SD, which locate the position on the base line of a normal curve beyond which lie the particular percentages of cases found cheating at the levels represented by the six tests, calling − 3 SD, or the extreme anti-cheating attitude, zero. Theoretically it would be possible to fill in as many levels as one chose between those now occupied by the six tests. Assuming that this has been done and that there is a level at each 0.1 SD, the scale would run as follows, with the present levels shown in italics:

1 2 3......16 17 18 19 *20* 21 22 23 *24* 25 26 *27*
28 29 30 *31* 32......39 *40* 41......49 50 *51*

On such a completed scale, the score should be either the height reached, or a computed height in case there were several tasks at each level of difficulty, in which case the level reached might be regarded as that on which 50% of the tasks were accomplished.

A modified score, allowing for imperfections in the scale, would be the total number of tasks completed, calling each task a unit. Adopting this plan in the case of the scale under discussion, we have 20 as the score of the one who reaches level 20, 31 as the score of the one who reaches level 31, etc., assuming that in each case he has done the hypothetical tasks between. Thus one who misses the top level makes only 40, or 11 less than the one who reaches the top.

---

* Cf. McCall, W. A., *How to Measure in Education*, pp. 300–306.

If the scale were filled in, then to miss step 24 would be no more significant than to miss step 25, and the score of one who skipped the second step but reached the third would be the sum of all the tasks thus accomplished up to 31, that is, 30. But the scale is not filled in, and so the assumption is arbitrarily made that one who skips a step misses also all the hypothetical tasks between that step and the next lower one.

Thus, again, one who skips the top step makes only 40, or 51 − 11, and one who skips the two top steps makes only 31, or 51 − 11 − 9. Likewise, one who reaches the top step but skips the fifth makes them all up to 31, but misses those from 32 to 40, inclusive, and then makes all from 41 to 51. His score is therefore 31 + 11 (40 to 51) or 51 − 9 (31 to 40) or 42. This is graphically represented as follows:

1	2	3
Arithmetic-Spelling	Word Knowledge	Completion
.........18 19 **20**	21 22 23 **24**	25 26 **27**
4	5	6
Reading	Sentences	Information
28 29 30 **31**	32 33....39 **40**	41 42.....50 **51**

Skipping step 2 or 3 or 4 is thus seen to count less in the score than skipping step 5 or 6, as there are fewer hypothetical tasks omitted.

Practically, the score is found by adding up the *intervals* that *precede* the *levels* actually reached. It is convenient, therefore, to simplify these intervals. This can be done without seriously changing their relative size by making the lowest level 21, the fourth 30, and the fifth 39. They thus become multiples of three and can be divided by three to make one, one, one, three, four.

The interval below 20 has still to be scored. At present this is the entire distance from − 3 SD or from the extreme *anti* position. This gives too much weight to the first interval as compared with the rest. Adopting the suggestion made in the discussion of the fourth criterion and calling the neutral point zero, and assuming further that this is about as far below the Arithmetic-Spelling level as this is below the Word Knowledge level, we have, say, – 1.2 SD as the zero point, which equals 18 half-SD's from – 3.0 SD, which is 3 below 21, the present Arithmetic-Spelling level. This step divided by 3 thus has equal score value with the next three.

The previous scale values, with neutral at 18, now read:

18—21—24—27—30—39—51

Shifting the zero point to 18 and inserting the intervals just now determined (the differences divided by 3), we have these new scale values:

0—1—2—3—4—7—11

Assuming again that the gaps in this scale might be filled in, the entire range represented by the present six tests is:

0—*1*—*2*—*3*—*4*—5—6—*7*—8—9—10—*11*

Attaching these scale positions to the tests and adding the score values just described, we have:

	Level		Score
Neutral point	0		0
Arithmetic-Spelling	1		1
Word Knowledge	2		1
Completion	3		1
Reading	4		1
No test	5	1	
No test	6	1	
Disarranged Sentence	7	1	3
No test	8	1	
No test	9	1	
No test	10	1	
Information	11	1	4
Highest possible score			11

Thus an individual's score is zero if he did not cheat at all; and if he did cheat, it is the sum of the score values of the tests on which he actually made changes.

E. Relation of Intelligence to the Scale Score

We are now ready to tackle the question of whether the difficulty levels are functions of cheating attitude or of intellectual ability, which was raised by the eighth criterion.

The correlation between the scale scores and Stanford IQ's is − .40 for the 263 cases of dependent children. These IQ's range from 60 to 140, with a mean of 97. This corresponds to the correlation secured from the IER tests with unselected groups and constitutes a rough validation of the scale.

Four interpretations suggest themselves concerning possible relations between intelligence and the scale.

First, that the increasing difficulties are *intellectual* in nature, thus requiring a higher intelligence for cheating on the high levels. Not only do the difficulties not appear to be of this character, the cheating involving only simple mechanical processes, but if this were the case the correlation would have been either zero or slightly positive, since we already know from previous testing that the correlation between intelligence and unscaled cheating is between − .40 and − .50. That is, the tendency for the lower intelligence levels to cheat more would have been neutralized on the scale by the increasing difficulty of cheating. But this effect is evidently not present.

Second, that the more intelligent may see through the procedure or be suspicious enough not to cheat. While it is probable that some such factor is at work, the evidence lends no support to the theory, for all those who erased ink have IQ's of over 100, and the child with the highest IQ in the group, 140, cheated on all tests except the ink-erasing one.

Third, that the more intelligent do not need to cheat and so are less tempted to do so. This is plausible, as is also the fourth interpretation, that there is an inherent relationship between the traits involved. That is, it may be the case that lower intelligence is accompanied by less resistance to cheating tendencies or by either inherited or acquired drives toward cheating or, perhaps, toward the sort of adjustment of which cheating is an instance.

It should be noted, however, that the standard error of prediction is .9 of the SD of the distribution, which would make any prediction concerning the step on the scale of six steps that would be reached by a given IQ wholly unreliable.

The following details bear out these arguments. The median IQ's of those reaching the various levels are:

Information	107
Disarranged Sentence	91
Reading	93
Language Completion	96
Word Knowledge	96
Arithmetic-Spelling	105
No cheating at all	103

Thus there is a slight tendency for the median IQ to increase as we descend the scale. These same facts are shown in a different way by computing the percentage of cases at each scale level who have IQ's of over 97, the mean of the whole group. They are:

Information	100
Disarranged Sentence	32
Reading	50
Language Completion	42
Word Knowledge	45
Arithmetic-Spelling	73
No cheating at all	62

We may conclude, therefore, that the steps on the scale are not particularly influenced by the differences in intelligence.

It might be said that these levels, instead of representing genuine attitudes toward cheating, merely represent degrees of recklessness or daring on the part of the subject. Thus the person who erases the ink may have the same attitude toward cheating as the one who only makes a few changes in the Spelling test, but he is much more daring. Thus the scale tests " nerve " or willingness to take a chance rather than attitude toward cheating.

There are three ways of meeting this criticism. One is by an empirical check-up with a series of paper-and-pencil tests of attitudes. The second is theoretical. We may argue that the pupil who is willing to take the chance is more set toward cheating than the one who will take only safe risks. This amounts to saying that for *practical purposes* this element of nerve or daring and attitude toward cheating may be regarded as one and the same thing.

The third check is by the use of other types of test material in which the mechanics are such that cheating is accomplished by the same general procedure throughout, thus eliminating differences due to variation in the risk. This has been done and these other tests also fall into the same sort of scale, thus eliminating the theory of nerve.

Finally, do other attitudes enter in? Probably they do to a certain extent. Some tests are more interesting than others. Some are more closely related to school subjects and therefore have certain acquired drives not available for other material. This might be true more particularly of the Arithmetic test as compared with the Language Completion. But it should be noted that the acquired drives would not function in terms of cheating unless there was also the tendency to cheat. They operate merely as unknown motives, therefore, and can be practically ignored so far as the scale is concerned, although they are of course theoretically important in the analysis of the individual,* and will be discussed presently.

Following this effort to scale the attitudes involved in a particular situation, we endeavored without success to form a scale which would include the tests representing a variety of situations both in classroom and out. That is, the attitudes associated with an act or distinct type of deception are apparently bound up with it in such a way as not to be operative in other acts or types of deception. They are, like the act itself, a specific mode of response which is as much a function of the situation as of the individual or, better, which is part of the total functioning complex that includes both the individual and the occasion.

---

* The article just quoted concluded by emphasizing the main thesis of the paper, namely, that the concept of a scale is general and may be applied to all kinds of testing.

THE SPECIFICITY OF MOTIVES

In Chapter XXII of Book One reference was made to this chapter for more detailed data on the specificity of motivation. The point advanced there was that the motives leading to deception are determined, in part at least, by the specific nature of the test material itself and the ability to master it. The facts are as follows:

In the case of the IER tests, which are sharply graded in difficulty, there are important negative correlations † between ability (as measured by achievement without keys) and cheating; that is,

TABLE CLXXVI

Correlations between Honest Score and Cheating on the IER Tests *

Arithmetic			Completion		
Population	r_{HC}	$r_{HC.I}$	Population	r_{HC}	$r_{HC.I}$
B	− .260	− .151	B	− .206	− .276
C	− .380	− .182	C	− .513	− .338
P Q	− .285		P Q	− .190	
Information			**Word Knowledge**		
B	− .233	− .230	A	− .248	− .032
C	− .255	− .156	B	− .248	− .164
P Q	− .135		C	− .308	− .264
			Q	− .187	+ .049
			F G	− .045	− .340

* H = Honest score C = Cheating I = Intelligence

---

† These r_{HC} correlations have all been corrected for errors of type I by formula (5), Chapter VI, which is

$$r_{EX} = \frac{r_{DX} \cdot \sigma_D - r_{EX} \cdot \sigma_E}{\sqrt{\sigma_D^2 - \sigma_E^2}}.$$

Here r_{EX} is the correlation between honest score and honest difference in the standardization population, where the honest score is taken as the score of the

the higher the honest score, the less the cheating. The figures are given in Table CLXXVI.

In this table H means honest, or ability, score and C means cheating. $r_{HC\cdot I}$ means the correlation between honest score and cheating, with intelligence (CAVI) constant. The r's are all low, yet high enough to be significant.

Since the honest score in Arithmetic, Information, Completion, and Word Knowledge made up the CAVI intelligence score used, it is necessary to partial out intelligence. The column headed "$r_{HC\cdot I}$" shows that in most instances there remains a slight negative correlation. These figures confirm the hypothesis that cheating is in part due to lack of test ability. The pupils scoring low on the test do as a matter of fact tend to cheat more than those scoring high.

A detailed study of the case of the Completion test in population C illustrates the point. Table CLXXVII compares the expected gains based on the standardization data with the actual gains of the non-supervised over the supervised test.

This table shows that those who had an honest score of 17 points on this test might have been expected to score 17.33 on the other form ; but when the key was used, they actually scored 25.48 points, which is a gain (cheating loss) of − 8.48, or 8.15 more than was expected. Those who had an honest (form B) score of 31 actually scored less on form A even when they had the key.

This is the most extreme instance we have and is selected more to illustrate than to prove the point. But the same general effect is found in all other tests when the r_{HC} in Table CLXXVI is −.20 or more. It cannot be said of the Completion test that those of the low honest scores cheated more because they had more room to cheat, for the maximum score of 55 was never reached by anyone. This is not wholly true in the case of the Arithmetic test,

second day and E is reckoned in terms of the first day minus the second. The relevant r's are:

Arithmetic	− .174
Completion	− .221
Information	− .362
Word Knowledge	− .174

TABLE CLXXVII

AMOUNTS OF CHEATING AND AMOUNTS OF ABILITY ON THE COMPLETION TEST

STANDARDIZATION DATA — POPULATION T				POPULATION C	
Honest Score, Form B	Mid-Point, Form B	Expected Honest Score, Form A	Expected Gain *	Actual Mean Gain *	Difference between Expected and Actual Gains
16.0 – 17.9	17.0	17.33	– 0.33	– 8.48	8.15
18.0 – 19.9	19.0	19.00	0.00	– 6.64	6.64
20.0 – 21.9	21.0	20.65	+ 0.35	– 3.80	4.15
22.0 – 23.9	23.0	22.31	+ 0.69	– 2.40	3.09
24.0 – 25.9	25.0	23.97	+ 1.03	– 2.72	1.75
26.0 – 27.9	27.0	25.63	+ 1.37	– 0.20	1.57
28.0 – 29.9	29.0	27.29	+ 1.71	+ 0.40	1.31
30.0 – 31.9	31.0	28.95	+ 2.05	+ 0.67	1.38

* Form B minus form A.

where some of the most deceptive pupils did gain the top when the answer sheet was at hand.

This tendency for those lowest in test ability to cheat most did not occur in the Speed test. On the contrary, those highest in ability cheated the most. The following coefficients are between honest speed ability score and Speed cheating.

TABLE CLXXVIII

CORRELATIONS BETWEEN HONEST SCORE AND CHEATING ON THE SPEED TESTS

	r_{HC}
Population C . .	+ .288
Population D . .	+ .036
Population F–J .	+ .434
Population R . .	+ .341

The two explanations offered in Book One, Chapter XXII, are these: (1) The IER tests are graded in difficulty and the Speed tests are not. Hence those of low ability in the IER material were more aware of their deficiencies than in the Speed tests. (2) In the

IER tests, in the use of the answer sheets the able and unable were on the same footing, whereas in the Speed tests those who had higher degrees of the abilities measured by the tests could make more use of the opportunities to cheat.

This contrast between the IER tests and Speed tests in respect to the relation between honest ability and cheating illustrates the point that the motives for cheating are in part determined by the nature of the test situation.

SUMMARY

Bringing together now the main facts of this chapter, the case in favor of the doctrine of specificity stands as follows:

1. Where test situations are as much alike as we can make them, the correlations between test scores run above .50, with none greater than .75; and as the test situations have less and less in common, the correlations between test scores decrease to nearly zero.
2. Tests representing different test situations elicit different amounts of cheating, and these differences grow less as the test situations become more alike.
3. Tests representing the same type of test situation but offering different degrees of resistance to cheating can be scaled so that those who overcome a greater resistance to cheat will also overcome lesser but similar resistances. Yet tests representing different test situations and different resistances cannot be so scaled.
4. The distribution of combined fact scores approximates the normal curve. If honesty or dishonesty were a unified trait, the distribution of scores would be U-shaped, or at least bimodal. The normal character of the curve, on the other hand, is not evidence of the normal distribution of a quantitative general deception function, as in this case the facts distributed as " fact scores " would need to constitute a scale such as found in size of feet or in intelligence scores, whereas the facts of the CT ratio do not constitute such a scale.

5. In one type of test situation (the IER) those having the greater ability to meet the situation successfully cheat less; but in another type of test situation (the Speed) those having the greater ability for successful performance cheat more.

These five points all support the hypothesis that honesty or dishonesty is not a unified character trait in children of the ages studied, but a series of specific responses to specific situations.

APPENDICES

PAGE
A. Bibliography of Methods of Detecting and Measuring Deceit . 245
B. Directions for the Duplicating Technique 248
C. Directions for Giving the Puzzle Tests (Including the Magic Square Stealing Test) 250
D. Directions for Giving the Coördination Tests 253
E. IER Test Directions 255
F. Directions for Speed Tests 259
G. Directions for the Physical Ability Tests 262
H. Plans for Stunt Party 264
I. CEI Pupil Data Sheet 268
J. Definitions of Classifications Used in Quantitative Summary . 273
K. Face Sheet and Rating Scale for Study of Homes 281
L. The Burdick Apperception Test (Test of Cultural Background) 287

APPENDIX A

BIBLIOGRAPHY OF METHODS OF DETECTING AND MEASURING DECEIT

1. Benussi, V. — "Die Atmungssymptome der Lüge," *Arch. f.d. ges. Psych.*, 1914, **31,** 244–273
2. Bird, Charles — "The Detection of Cheating in Objective Examinations," *School and Society*, 1927, **25,** 261–262
3. Blatz, W. E. — "The Cardiac, Respiratory, and Electrical Phenomena Involved in the Emotion of Fear," *Journal of Experimental Psychology*, 1925, **8,** 109–132
4. Burtt, H. E. — "A Pneumograph for Inspiration-Expiration Ratios," *Psychological Bulletin*, 1918, **15,** 325–328
5. —— "The Inspiration-Expiration Ratio during Truth and Falsehood," *Journal of Experimental Psychology*, 1921, **4,** 1–23
6. —— "Further Technique for Inspiration-Expiration Ratios," *Journal of Experimental Psychology*, 1921, **4,** 106–110

7. Burtt, H. E. — "Measuring Interest Objectively," *School and Society*, 1923, **17,** 444–448
8. Cady, V. M. — "The Estimation of Juvenile Incorrigibility," *Journal of Delinquency, Monograph No. 2*, 1923
9. Cannon, W. B. — *Bodily Changes in Pain, Hunger, Fear, and Rage*, New York, 1915
10. Chambers, E. V. — "A Study of Dishonesty among the Students of a Parochial Secondary School," *Pedagogical Seminary*, 1926, **33,** 717–728
11. English, H. B. — "Reaction Time Symptoms of Deception," *American Journal of Psychology*, 1926, **37,** 428–429
12. Erlanger, J. — "A New Instrument for Determining the Minimum and Maximum Blood Pressures in Man," *Johns Hopkins Hospital Reports*, 1904, XII, 53–110
13. Franzen, R. H. — "Measurement of Non-intellectual Aspects of Behavior," Proceedings of First Annual Conference of Educational Research and Guidance, *San José Teachers College Bulletin*, 1922
14. Goldstein, E. R. — "Reaction Times and the Consciousness of Deception," *American Journal of Psychology*, 1923, **34,** 562–581
15. Gundlach, Ralph — "A Method for the Detection of Cheating in College Examinations," *School and Society*, 1925, **22,** 215–216
16. Henke, F. G., and Eddy, M. W. — "Mental Diagnosis by Reaction Method," *Psychological Review*, 1909, **16,** 399–409
17. Jung, C. G. — "Diagnostische Assoziationstudien," *Jr. f. Psy. u. Neurol.*, 1905, **6,** 1–36
18. —— "Diagnostische Assoziationstudien, *Jr. f. Psy. u. Neurol.*, 1906, **7,** 1–24
19. —— "The Association Method," *American Journal of Psychology*, 1910, **21,** 219–240
20. Knight, F. B., and Franzen, R. H. — "Pitfalls in Rating Schemes," *Journal of Educational Psychology*, 1922, **13,** 204–213
21. Landis, Carney — "General Behavior and Facial Expression," *Journal of Comparative Psychology*, 1924, **4,** 447–509
22. —— "Studies in Emotional Reactions — I. A Preliminary Study of Facial Expression," *Journal of Experimental Psychology*, 1924, **7,** 325–342
23. Landis, C., *et al.* — "Criteria of Emotionality," *Pedagogical Seminary*, 1925, **32,** 209–234
24. Landis, C., and Gullette, R. — "Studies of Emotional Reactions — III.

Systolic Blood Pressure and Inspiration-Expiration Ratios," *Journal of Comparative Psychology*, 1925, **5**, 221–253

25. Landis, C., and Wiley, L. E. — "Changes of Blood Pressure and Respiration during Deception," *Journal of Comparative Psychology*, 1926, **6**, 1–19
26. Langfeld, H. S. — "Judgments of Facial Expression and Suggestion," *Psychological Review*, 1918, **25**, 488–494
27. —— "The Judgment of Emotions from Facial Expressions," *Journal of Abnormal Psychology*, 1919, **13**, 172–184
28. —— "Psychological Symptoms of Deception," *Journal of Abnormal Psychology*, 1921, **15**, 319–325
29. Larson, J. A. — "Modification of the Marston Deception Test," *Journal of Criminal Law and Criminology*, 1921, **12**, 390–399
30. —— "The Cardio-pneumo-psychogram," *Journal of Experimental Psychology*, 1922, **5**, 323–327
31. —— "The Cardio-pneumo-psychogram in Deception," *Journal of Experimental Psychology*, 1923, **6**, 420–453
32. Leach, H. M., and Washburn, M. F. — "Some Tests by the Association Reaction Method of Mental Diagnosis," *American Journal of Psychology*, 1910, **21**, 162–167
33. Marston, W. M. — "Systolic Blood Pressure Symptoms of Deception," *Journal of Experimental Psychology*, 1917, **2**, 117–163
34. —— "Psychological Possibilities in the Deception Tests," *Journal of Criminal Law and Criminology*, 1920–21, **11**, 551–570
35. —— "Reaction-Time Symptoms of Deception," *Journal of Experimental Psychology*, 1920, **3**, 72–87
36. —— "Negative Type Reaction-Time Symptoms of Deception," *Psychological Review*, 1925, **32**, 241–247
37. May, Mark A., and Hartshorne, Hugh — "First Steps toward a Scale for Measuring Attitudes," *Journal of Educational Psychology*, 1926, **17**, 145–162
38. Murdoch, K. — "A Study of Differences Found between Races in Intellect and in Morality," *School and Society*, 1925, **22**, 628–632, 659–664
39. Nixon, H. K. — "A Simple Device for Recording Inspiration-Expiration Time," *Journal of Experimental Psychology*, 1923, **6**, 383–386
40. Persing, K. M. — "Morals and Chemistry," *Educational Review*, 1926, **72**, 164–168

41. Raubenheimer, A. S. — "An Experimental Study of Some Behavior Traits of the Potentially Delinquent Boy," *Psychological Monographs*, No. 159, 1925
42. Rich, G. J. — "Dr. Marston on Deception Types," *American Journal of Psychology*, 1926, **37,** 307–309
43. Terman, L. M., *et al.* — *Genetic Studies of Genius*, Vol. I, 1925, Stanford University Press
44. Voelker, P. F. — "The Function of Ideals in Social Education," *Teachers College Contributions to Education*, No. 112, 1921. See also Athearn, W. S., *The Indiana Survey of Religious Education*, Vol. II, 1923
45. Wechsler, David — "The Measurement of Reactions," *Archives of Psychology*, No. 76, 1925
46. Wertheimer, M., and Klein, J. — "Psychologische Tatbestandsdiagnostik," *Arch. f. krim. Anthropol. u. Kriminalistik*, 1904, **15,** 72–113
47. —— "Experimentelle Untersuchungen zur Tatbestandsdiagnostik," *Arch. f. d. ges. Psychol.*, 1905, **6,** 59–131
48. Yerkes, R. M., and Berry, C. S. — "The Association Method of Mental Diagnosis," *American Journal of Psychology*, 1902, **20,** 22–37

APPENDIX B

DIRECTIONS FOR THE DUPLICATING TECHNIQUE

When the tests are first given, they are administered as ordinary school tests, with the usual directions, save that less time is allowed for taking the test than is usually given. After the pupils' papers have been copied in the office, they are returned to the classroom and handled as follows:

Directions for Scoring

"We are giving this school and —— (naming the other school) certain tests. The children at —— have had the same tests that you have taken. They corrected their own papers, so we are going to have you correct the tests you took last week."

Pass out the papers.

"We shall now pass out a key or answer sheet for each test. You are to use these only for the purpose of correcting the work already done. Make no changes whatever in your papers."

1. Information. Pass out the keys. " Here is the answer sheet for the Information test. It shows the word that should have the circle around it. If you have the right word, mark it ' C.' Count up the number of C's. This is your score. Place it at the bottom of your paper." Allow three minutes or enough time for at least four fifths of the class to finish.

2. Disarranged Sentences. "The answer sheet gives the correct sentence. If you have it just the way it is on the answer sheet, mark it ' C.' Count your C's as before." Allow three minutes or enough time for four fifths to finish.

3. Reading. " To score your papers, use the answer sheets in this way. For each question there are one or more correct answers. If your answer is like one of those given, mark it ' C.' Count your C's." Allow eight minutes or enough time for four fifths to finish.

4. Completions. " Use your answer sheets as for the Reading test. There is only one correct answer, however. If your answer is like the answer sheet, mark it 'C.'" Allow five minutes or enough time for four fifths to finish.

5. Spelling. " The answer sheet shows the words that are misspelled. If you have the same word marked wrong as the key has, mark your word ' C.' Do not mark anything else, for everything else is wrong." Allow three minutes or enough time for four fifths to finish.

6. Word Knowledge. "The number of the correct word is shown on the answer sheet. If you got it right, mark it ' C '. Count your C's. This is your score. On the blackboard you will find the score that children in this grade may be expected to make and what this score means in your usual percentage grade." Allow three minutes or enough time for four fifths to finish.

7. Arithmetic. " The correct answers are given on the answer sheet. If your answer is correct, mark it ' C.' If it is not like the key, it is wrong. Count your C's. This is your score. This is the most important test. The principal wishes you to know that what you get on this test will count toward your standing this month. You will see on the board the score that children in this grade may be expected to get and what this means in your usual percentage grade." Allow three minutes or enough time for four fifths to finish.

APPENDIX C

DIRECTIONS FOR GIVING THE PUZZLE TESTS

The puzzles are assembled in a package, a score sheet with each package, properly marked. The sheet must not be separated from the package. Before passing the puzzles say: "We are to have a quite different kind of test to-day. These are called 'puzzle tests.' They seem like a game, but they are really rather hard to do. Tests like these are often used in intelligence tests, and you may have taken some of them before. Do not touch the tests until I tell you what to do."

Give a package of the tests to each pupil. Then say, "Now open the score sheet and fill in the blanks at the top of the page."

(The order in which the puzzles are given will vary with different groups. Have in mind this order when you begin and number the following directions to correspond with this order. The Magic Square will always come last.)

A. Pill Boxes

"First take the little round boxes out of the long white box and place them in front of you, with the numbers down. The problem is to arrange these little boxes in a row according to their weight. People differ in their ability to distinguish weights. Arrange the boxes in order of weight, with the heaviest at one end and the lightest at the other. Do not look at the numbers on the bottoms of the boxes. Begin." Allow three minutes.

"Now in the row of squares on your score sheet where it says, 'First Trial,' copy the numbers from the bottoms of the boxes to show the exact order in which you have arranged them. If you have done the test absolutely right, the numbers will run 1, 2, 3, 4, 5, 6, 7 or 7, 6, 5, 4, 3, 2, 1. In this case your score is 100. If you have any two adjoining numbers interchanged, as 7, 6, instead of 6, 7, or 4, 5, instead of 5, 4, your score is 50." Allow time for entering the figures.

"Now turn all the boxes with the numbers down, mix them all up, and try again." Allow three minutes.

"Now copy off in the squares where it says, 'Second Trial,' the numbers on the bottoms of the boxes, to show how you have them arranged in the second trial." Allow time for entering the numbers and then say, "Now mix the boxes again and replace them carefully in the box as you found them."

B. Peg Board

"Take the peg board out and place it in front of you. See that there is a peg in every hole except the center hole. The object of this puzzle is to get all the pegs off but one by jumping. (Illustrate from the large model.) You may jump forward or backward or sidewise, but not across corners. Do you understand? Any questions? Now see who can get the most pegs off in five minutes by jumping." Allow five minutes.

"Now count the number of pegs you have left on the board. Put this number or the smallest number you have made on any trial at the right after paragraph A. This test is scored as follows:

"If you have only 1 left and this is in the center, your score is 100.

"If you have only 1 left and this is not in the center, your score is 75.

"If you have from 2 to 4 left, your score is 50.

"If you have from 5 to 10 left, your score is 25.

"Nothing else counts."

Allow time for entering the figures.

"Now put all the pegs back on the board, leaving the center hole empty, and try again. Begin." Allow three minutes.

"Now count the pegs you have left and put this number, or the smallest number you have made on any trial, in the space at the right after paragraph B. If on any trial you had one peg left and this one was in the center hole, write the word 'Yes' in the space at the right of paragraph C. Please put all the pegs back on the board as you found them and replace the board in the box."

C. Puzzle Blocks

	10	8	5	13
Standard	15	6	2	3
arrangement	9	11	12	
	14	1	7	4

"Open the tiny square box containing the blocks with the numbers on them. Do not remove or touch the numbers until I tell you what to do. The object of this puzzle is to get the blocks in the order which I will now try to secure by moving the blocks around. Watch this carefully. You are to slide the blocks around like this. Do not take any block out of the box. This is not fair. Note the position of the numbers as I have now arranged them (in serial order on model). Now see who can solve this puzzle first. Begin." Allow five to eight minutes.

"Now copy the numbers as they appear, just as you have them, in the squares on the score sheet. A perfect score gives you 100. The first three lines right is 75. The first two right is 50. The first right is 25. (While pupils are working rearrange the big blocks in the standard arrangement. Put this on board also if possible.) Now please put all the blocks back in the order I have here. Please be exact in replacing them. Cover the boxes and slip the band around them."

D. The Magic Square (Upper Grades)

"This last puzzle is one about which a great deal has been written. You may have seen the book on the Magic Square. It has very interesting possibilities. We shall try only one of the many puzzles that might be tried with it. You will see as you open the box that it contains a lot of coins. Take the coins all out and put them beside the box or keep them in your hand. On the bottom of the box you will see some circles around a square, three circles in each direction, making places for nine coins in all. You have more than nine coins, unless there has been some mistake, so there will be more than enough to have one in each circle. But there is only one way to place them correctly in the circles. And this is to place them so that each row will add up to exactly the same amount as every other row and to exactly the same amount as each diagonal, or cornerwise, row. I am not going to tell you what this amount is, nor just what coins will make it work. The penny is called 1, the nickel 5, the dime 10, the quarter 25, and the Chinese coin 0. At the bottom of the score sheet at the left you will see the directions and can refer to them at any time. Now let's see who is bright enough to get this puzzle." Allow from five to ten minutes.

"Now you have probably done at least one of the three things described on the score sheet at the left. Write carefully in the circles on the *score sheet* (not in the box) the value of the coins as you now have them placed in the box. As soon as you have done that, pass in your score sheet." Collect the score sheets.

"Now put the money all back in the boxes, put the rubber bands around them, and we will collect them."

APPENDIX D

DIRECTIONS FOR GIVING THE COÖRDINATION TESTS

"The tests we are to have now are called puzzles. They seem like games, but they are really rather hard. They test what is called your muscular coördination. Try this, for example. Touch the ends of your little fingers together like this. Now shut your eyes and do it. This was very easy. Here are the tests. Do not do anything till I explain." Pass all three tests.

A. Mazes Puzzle

"Write your name and grade at the top of the page.

"These little figures are called mazes. There are fifteen of them. We are going to see how well we can draw a line through each pathway without touching the sides. Only we shall do it *with our eyes shut.*

"Read the directions. (Examiner reads as follows.) 'Wait for the signal for each maze. Each time put the point of your pencil on the cross. Do you see the cross? Then when the signal is given, *shut your eyes* and move your pencil through the maze without touching the sides.' That is all we need read now.

"Ready for the first maze. Hold your paper at the bottom with the fingers of your left hand. Put the point of your pencil on the cross of maze No. 1. Shut your eyes tight and draw a line to the right and upward without touching the sides. Go. (Allow 5 seconds.) Open your eyes. How many succeeded in not touching the sides? If you did not touch the sides, you got 1. Put 1 on the dotted line opposite 'Maze No. 1' at the left. If you touched the sides, put down zero.

"Put your pencil on the cross for maze No. 2. Shut your eyes. Go. (Allow 5 seconds.) Open your eyes. If you got it, enter your score, 1, on the dotted line. If you touched the sides, put down zero.

"Now, pencil on third cross. Eyes shut. Go. Enter your score."

Ditto for each. Allow time as follows:

First five mazes, 5 seconds each (about)

6 to 10	10 seconds each	2 seconds to look
11	15 seconds	2 seconds to look
12	15 seconds	2 seconds to look
13	15 seconds	3 seconds to look
14	20 seconds	3 seconds to look
15	25 seconds	4 seconds to look

Beginning with maze No. 6, say each time: "Pencil on cross. Look carefully at the maze. (Allow time shown above.) Eyes shut. Go.

"If you want to know your score, add up the column of figures you have put on the dotted lines and put the sum after the word 'Total.'"

B. Circles

" Write your name and grade at the top of the paper.

" Read the directions. (Examiner reads as follows.) 'Put the point of your pencil on the cross at the foot of the ovals. Then when the signal is given, shut your eyes and put the figure 1 in each circle, taking them in order.' That's all we need read just now.

"Hold your paper at the bottom with the fingers of your left hand. Put your pencil point on the big cross on the line at the bottom. Look around at the circles. Notice the first is the big circle at the left. *Now shut your eyes tight* and put the figure 1 in as many circles as you can without opening your eyes. Go. (Allow 10 seconds.) Open your eyes. How many hit the first circle? How many hit the second? How many the third? Now look at the squares in the center of the page. The first row of squares is for this first trial. The numbers at the top are for the ten circles. For every circle that you hit, put a check mark in the proper square. Thus if you got your figure 1 in the first three circles, put a check mark in the first three squares." Allow only a few seconds for this.

"Ready for the second trial. Put your pencil point on the cross. *Shut your eyes* and put the figure 2 in as many circles as you can without looking, beginning with circle No. 1. Go. (Allow 10 seconds.) Open your eyes. The second row of squares is for this trial. Put a check for each circle you hit.

"Ready for the third trial. Put your pencil on the cross. *Shut your eyes* and put a figure 3 in as many circles as you can without looking. Go. (Allow 10 seconds.) Now check your circles in the third row of squares.

"This is all we shall do on this puzzle. If you want to know your total score, add up all your check marks. This is your score."

C. Squares

"Write your name and grade at the top of the page.

"Read the directions through the first paragraph. (Examiner reads aloud the first paragraph.)

"Now put your pencil point on the cross in square 1, nearest the center. Notice that you are to draw the line toward the left and around the center square in the little path between the lines. Ready? Hold your paper at the bottom with your left hand. *Shut your eyes tight.* Go. (Allow 10 seconds.) Open your eyes. How many went around without crossing the black lines like this? (Illustrate on board.) Now look at the directions again and read the second paragraph." Examiner reads aloud, then says, "If you went around without touching the sides, put a check mark where it says, 'Square 1.'

"Now put your pencil on the next cross in square 2, which is just below the first cross. This time go toward the right. *Shut your eyes.* Go. (Allow 12 seconds.) Open your eyes. If you got this square right, put a check where it says, 'Square 2.'

"Ready for the third square. Put pencil point on the next cross. Remember to go toward the *left.* Ready? *Shut your eyes.* Go. (Allow 15 seconds.) Open your eyes. If you got this square, check up your mark as before."

Square No. 4. Same as for 3; allow 18 seconds.

Square No. 5. Same. Allow 20 seconds.

"If you want to know your score, look at the score table at the right. You need not stop now to enter it on your papers.

"Pass in all the papers."

APPENDIX E

IER TEST DIRECTIONS

A. Form CA, First Day

See to it that the following supplies are available and ready to use before time for testing to begin:

Test blanks and keys. The arithmetic tests and keys are assembled in advance, and each test with set of keys is tied up in a bundle containing correct number for the group to be tested.

A few picture magazines to interest those who get through early

Sharpened pencil and eraser for each child, with a few sharpened pencils ready to be loaned

Scratch paper for the Arithmetic test for each pupil

Upon entering the room or just before the testing begins, say privately to the *teacher:* "It has been arranged for you to be excused during these tests. You are not expected to stay in the room."

Say to the pupils: "We are going to have some tests to-day. When the papers are passed, they will be fully explained. Do you each have a sharpened pencil and an eraser?"

Test 1. Arithmetic

"Do you have scratch paper to figure on?

"This test is made up of some arithmetic problems. I will pass out an answer sheet with each test so that you can correct your own papers. The answer sheet is the typewritten sheet. Keep it under your paper and out of sight until you have finished."

Pass the papers, the key with each.

"Fill in the blanks at the top of the paper. Write very carefully. Give your age in years and months. The date to-day is ——.

"Look at the directions. (Read.) Any questions? No questions will be answered during the test.

"If you finish before the time is up, look over your work to see that it is as you want it. Keep your answer sheet out of sight till all are through. Begin."

At the end of 30 minutes say: "Stop and correct your papers, using the answer sheet, which gives the right answer for each question. Put a C after each answer that is right and an X after each answer that is wrong. Do not mark the ones you skipped. Count the number of C's. This is your score. Put it in the upper right corner of the front page."

Allow not over 10 minutes for scoring.

"Stop and pass your papers and answer sheets to the front." Be sure each time that all keys and papers are collected.

Test 2. Completions

Pass the test blanks, saying: "Write only your name at the top. Write it carefully.

"In this test the missing parts of some sentences are to be filled in. Look at the directions. (Read.) Any questions?

"If you finish early, turn your papers face down. Begin."

At the end of 20 minutes say: "Stop and correct your papers. This is the answer sheet. It gives the correct answer for each question. Put a C after each answer that is right and an X after each answer that is wrong. Do not mark the ones you skipped. Count the C's. This is your score. Put this number at the upper right corner of the front page."

Pass the keys. Allow not over 12 minutes for scoring.

"Stop and pass your papers and keys to the front."

Five minutes' recess.

Test 3. Information

Pass the test blanks, saying: "Write only your name at the top.

"This is a test of whether you know certain things. Look at the directions. (Read.) Any questions? Go ahead."

At the end of 6 minutes say: "Stop and correct your papers. Remember to put a C after each answer that is right and an X after each answer that is wrong. Count the C's and put the number at the upper right corner."

Pass the keys and allow not over 5 minutes for scoring.

Then say, "Stop and pass your papers and keys to the front."

Test 4. Word Knowledge

Pass the test blanks.

Then say: "Write your name and also your class and the date, which is ——. Be sure to write carefully.

"In this test you are to give the meaning of some words. Let's see if you understand the directions. Look at the first word in line 1. Find the other word in the line which means the same or most nearly the same. Write its number on the line at the right side of the page. Do the same in lines 2, 3, 4, etc. Lines A, B, C, and D show the way to do it. Do all the lines you can.

"Now look at line A. The first word is 'beast,' and the word in line A that means most nearly the same is what? 'Animal.' And its number is what? '4.' So the figure 4 is written on the dotted line. This means that number 4 is the correct word. What is the correct word in line B? It is 'little child,' No. 3, so 3 is written on the dotted line. What is the correct word in line C? No. 1, 'lift up.' So 1 is written on the dotted line. In line D the word most like 'blind' is 'cannot see,' which is No. 2; so a 2 is put on the dotted line. Do you see how to do it?

"You will have to take this test home and do it as part of your home work. Do the test all by yourself and do not get any help from anyone, or even from the dictionary. Do it to-day and bring it back to-morrow morning. Is that all clear? Do it to-day and bring it back to-morrow morning. Do not get any help on it. That is all of our tests for to-day."

B. Form CB, Second Day

See to it that the following supplies are available and ready to use before the time for testing to begin:

Test blanks. *No* keys. The blanks are tied in bundles, the correct number for the group in each bundle. *No* scratch paper

A few picture magazines to interest those who get through early

Sharpened pencils and erasers

Upon entering the room or just before the testing begins, say privately to the *teacher:* "We should like to have you in the room during the tests to-day. We do not think that any copying is going on, but it is important that there should be none at all in order that the results of the testing may be as accurate as possible."

Also collect the Word Knowledge tests taken home at the previous testing.

Say to the pupils: "We are going to have some more tests to-day similar to those we had before. When the papers are passed out, they will be fully explained. Does each of you have a sharpened pencil and an eraser?"

Test 1. Arithmetic

Pass the test blanks, saying: "Fill in all the blanks at the top of the page. Write very carefully. Give your age in years and months. The date to-day is ——.

"This test is made up of some arithmetic problems just as before, and the directions are the same. (Read.) Any questions? No questions will be answered during the test.

"If you finish before the time is up, look over your work and see that it is as you want it. Begin."

At the end of 30 minutes say, "Stop now and pass your papers to the front."

Test 2. Completions

Pass the papers, saying: "Write only your name at the top. Write it carefully.

"In this test the missing parts of some sentences are to be filled in just as before. Look at the directions. (Read.) Any questions?

"If you finish early, turn your papers face down. Begin."

At the end of 20 minutes say, "Stop now and pass your papers to the front."

Five minutes' recess.

Test 3. Information

Pass the papers face down, saying: "Write only your name at the top.

"This, you remember, is a test of whether you know certain things. Look at the directions. (Read.) Any questions? Go ahead."

At the end of 6 minutes say, "Stop and pass the papers to the front."

Recess or not according to time.

Test 4. Word Knowledge

Pass the test blanks, saying: "Write only your name at the top. Be sure to write it carefully.

"In this test, you know, you are to give the meaning of some words. Let's see if you still understand the directions. Look at the first word in line 1. Find the other word in the line which means the same or most nearly the same. Write its number on the line at the right side of the page. Do the same in lines 2, 3, 4, etc. Lines A, B, C, and D show the way to do it. Do all the lines you can. Remember how to do it? If you finish early, look over your work to see that it is as you want it and then turn it face down. Begin now."

At the end of the time available (not less than 30 minutes) say, "Stop now and pass your papers to the front" (or "bring your papers to the desk").

APPENDIX F

DIRECTIONS FOR SPEED TESTS

Say: "To-day we are to have some tests which will show how fast and accurately you can do certain kinds of work. Tests like this were used in the army and are now used in civil service examinations. In taking these tests it is necessary to do exactly what the examiner says. Do nothing to the papers until you are told what to do."

Pass the twelve-page folder.

Say: "As this is a speed test, everyone must start and stop at the same time. We do this by holding up our pencils, like this, when we are not using them. Pencils up. When I say, 'Go,' write your name, grade, and the date in the blanks at the top of the page. Write clearly. As soon as you have done this, hold your pencils up. Ready? Go."

Allow sufficient time and say: "All pencils up. Now read what it says. (Examiner reads aloud where it says, 'Read this.') Is that clear? Pencils up. Look at Test 1 at the bottom of the page. This is an addition test. When I say, 'Go,' begin at the upper left corner and add as many of these examples as you can. Work across the page from left to right. Write the answers under the lines. Work fast. Ready? Go."

In one minute say: "*Stop.* Pencils up. Turn the page with your free hand. We will try this again. When I say, 'Go,' add as many of these examples on page 2 as you can. Ready? Go."

In one minute say: "*Stop.* Pencils up. Turn to Test 2, page 3, page 3, not 4. Look at each pair of numbers. When I say, 'Go,' make a cross after any pair where the numbers are *not* alike, as shown in the sample, and put a C after any pair where the numbers *are* alike. (Repeat.) Understand? Do not skip any. Work down the page. Ready? Go."

In one minute say: "*Stop.* Pencils up. Turn to the next page, page 4, using your free hand. We will try this test again. Remember to put an X after each pair that are not alike and C after each pair that are alike. Do not skip any. Work down the page. Ready? Go."

In one minute say: "*Stop.* Pencils up. Turn to Test 3, page 5. Be sure you have page 5. When I say, 'Go,' draw a line under every A as shown in the sample. Begin at the left of the top line and work across the page to the right. Then go back and do the second line, etc. Work as fast as you can. Ready? Go."

In one minute say: "*Stop.* Pencils up. With your free hand turn the page to page 6. We will try this test again. Do your best. Remember to work across the page from left to right. Ready? Go."

In one minute say: "*Stop.* Pencils up. Turn to Test 4, page 7. Be sure you have page 7. When I say, 'Go,' you are to follow the key at the top of the page and put a figure 1 in every star, a 2 in every circle, a 3 in every square, a 4 in every cross, and a 5 in every triangle. Keep your pencils up until I give the signal to go. Work across the page from left to right. Do each figure as you come to it. Do not skip any. Ready? Go."

In one minute say: "*Stop.* Pencils up. With your free hand turn the page to page 8. We will try again. Do each figure as you come to it. Ready? Go."

In one minute say: "*Stop.* Pencils up. Turn to Test 5, page 9. Be sure you have page 9. In this test you are to see how fast you can make your pencil move. When I say, 'Go,' put a dot in every little square, like this (illustrate by rapid dotting). Begin at the top and work across the page from left to right. Don't skip any squares. Put one dot in each as fast as ever you can. Ready? Go."

In thirty seconds say: "*Stop.* Pencils up. Turn the page to page 10. Try again. Do your best. One dot in a square, working across the page. Ready? Go."

In one minute say: "*Stop.* Pencils up. Turn to Test 6, page 11. Be sure you have page 11. When I say, 'Go,' draw a line under every 4 as shown in the sample. Work across the page from left to right. Ready? Go."

In one minute say: "*Stop.* Pencils up. Turn the page to page 12. We will try again. A line under every 4. Ready? Go."

In one minute say: "*Stop.* Pencils up. Close the booklet and turn it face up on your desk. Now write the word 'Practice' across the top of the front page. Pass your papers promptly."

Collect the papers. Allow one-minute recess with finger exercises or something similar.

Pass the eight-page folder.

Say: "That was for practice. These tests are just like the ones you have just practiced on. You are now ready to do your very best. Remember that you must keep your pencils up until I say, 'Go.' Start when I say, 'Go,' and stop when I say, 'Stop.' Now when I say, 'Go,' fill in *all* the blanks at the top of the front page. Ready? Go."

Allow time enough and say: "All pencils up. With your free hand turn to Test 1, page 2. This is the Additions test. Ready? Go."

In one minute say: "*Stop.* Pencils up. When I say, 'Go,' count the examples you got right. You can easily tell the right answer. Your score on this test is the number you got right. Put this number in the lower right corner where it says, 'Score.' Ready? Go."

In two minutes or less say: "*Stop.* Pencils up. Turn to Test 2, page 3. Remember to put a cross after each pair that are not alike and a C after each pair that are alike. Do not skip any. Work down the page. Ready? Go."

In one minute say: "*Stop.* Pencils up. When I say, 'Go,' count the pairs you have correctly checked. This is your score. Write the number in the lower right corner. Ready? Go."

In two minutes or less say: "*Stop.* Pencils up. Turn to Test 3, page 4. Remember you are to draw a line under every A. Ready? Go."

In one minute say: "*Stop.* Pencils up. When I say, 'Go,' count the number of A's you have just underlined. This is your score. Write this number in the lower right corner. Ready? Go."

In one and a half minutes or less say: "*Stop.* Pencils up. Turn to

Test 4, page 5. Put the correct number in each of the figures. Do each figure as you come to it. Ready? Go."

In one minute say: "*Stop.* Pencils up. Now count the number of figures you did correctly. This is your score. Put this number in the lower right corner. Ready? Go."

In two minutes or less say: "*Stop.* Pencils up. With your free hand turn to Test 5, page 6. Put a dot in each square. Ready? Go."

In one minute say: "*Stop.* Pencils up. Count the squares in which you have a dot. You can count quickly if you note that there are 25 squares in a row. So count the rows you filled and multiply 25 by this number. Add to this the number of squares you have in any rows you did not entirely fill. Your score is the number of squares in which you put a dot. Ready? Go."

In two minutes or less say: "*Stop.* Pencils up. Turn to Test 6, page 7. You are to draw a line under each 4. Ready? Go."

In one minute say: "*Stop.* Pencils up. Count the 4's you underlined. This is your score. Ready? Go."

In one and a half minutes or less say: "*Stop.* Pencils up. Close your booklets and pass them promptly."

Collect the papers.

APPENDIX G

DIRECTIONS FOR THE PHYSICAL ABILITY TESTS

The hand dynamometer and spirometer are in an enclosed space at one side of the gymnasium. The bar and mat are in the gymnasium proper. The chief examiner sits in the alcove and handles the two machines. The assistant takes care of the pull-up and broad jump. The pupils go first to the chief examiner.

He says: "This is a school contest to see which boy is strongest for his age and weight. You may compete for strength of grip, for broad jump, for pull-up, and for lung capacity. See, here are the medals. (Display them and explain.) This is your record card. You may keep your own record. What is your name? (Check name on sheet.) Now we will get your height and weight. (Coat and shoes off. Enter facts on card.) Now for the events."

A. The Hand Dynamometer

Examiner holds dynamometer in his hand and explains it. "This is to measure your grip. Have you seen one before, or used one? How much could you grip on it? (Examiner demonstrates exactly how to hold it or grip it and squeeze it.) Now you see how it is done. First I must adjust it to your hand. Are you left- or right-handed? Hold it down by your side and do not let your hand touch your body. Now squeeze it hard. Harder. Now look at it. (Explain the dial reading.) Read what you gripped. Put the dial back and try again. Try hard. Now read it. Try again. Read it now. (Examiner remembers the highest of these three trials and enters it later opposite subject's name on his list.) Do you understand how to do it? Now while I start the next pupil, you try ten times and record each trial here on your card. Your best score is the one that counts. Go over there and do your best. As soon as you have finished, come back and I will show you the next test."

B. Spirometer

"Now this instrument measures your lung capacity. (Put on a fresh sanitary mouthpiece.) Stand up straight, lift your head, take a long breath, and then blow it out. Breathe once without the instrument. (Examiner helps subject to take his best breath.) Now take another and blow it all out into the tube. It is not how hard you blow, but how much air you have in your lungs. Blow it all out. Now look at the dial. This shows how much your lungs hold. Now try once more. Take in all the air you can and then blow out all you can. Now read the dial. (Examiner remembers the better trial and records it later.) Do you understand how to do it? You may have three trials. While I go on with the next boy, you try three more times and record on your card what the dial says each time. Your best blow is the one that counts. Come back to the desk when you have blown three times."

When the subject returns to the desk, send him out with his card to the assistant, who will give him the other two tests.

C. Pull-up

"Do you know how many times you can chin? (If the subject knows, record his answer on the back of the card when he is not looking.) We will now adjust the bar and let you try. Stand on your toes and reach up. (Examiner puts bar just high enough for subject to reach it when standing on his toes.) Now these are the rules. First, you must let yourself all the way down, so that your arms are fully extended each time. Second, you must not change your grip on the bar, but always keep your palms toward you. Third, you must not let your toes touch the ground. Now we will practice once and see if you can remember the rules. Pull up as many times as you can. (Examiner notes the number of times and records it later.) Now while I attend to the next boy, you go ahead and see how many times you can chin. You may have two trials. Remember what you do on each trial and write it on your card."

After this boy has finished, the bar is lowered below the point needed for the next subject.

D. Broad Jump

"Do you know how far you can jump from a standing position? (Examiner records answer when boy is not looking.) "These are the rules. Toe this line, swing your arms, and jump. (Examiner demonstrates.) Now try it. (Note the distance to heels.) Now try again. (Note this distance to heels. Record the longer jump later.) Now while I attend to the next boy, you may take three more trials. Note where your heels come each time and record the distance on your card."

As soon as he has finished the subject is dismissed.

APPENDIX H

PLANS FOR STUNT PARTY

I. Facilities and equipment
  A. Rooms
    1. Three large rooms to accommodate comfortably a group of 50 children
    2. One small room having two entrances or a booth arrangement with screens so that children may enter one at a time and pass out on the opposite side
    3. Placards hung conspicuously, numbering the rooms
    4. Room 1, registration room and booth, table and chair
    5. Room 2, tables and chairs to accommodate half the group at one time
    6. Room 3, empty but for table needed in donkey game
    7. Room 4, empty, for general use

B. Equipment

1. Registration sheet spaced for name, number, choice, and mystery
2. Tag numbers of heavy manila paper or cloth, at least 4 × 5, heavy black numbers, one for each child
3. Set of peeping tests
4. Two donkey games or targets set up on full-size white sheets on opposite sides of room 3. Tails or arrows on second set renumbered to run upwards from 24, there being 24 in a set. Games hung so that children move parallel with floor boards
5. Paper of pins
6. Two blinders, triangular bandage fold, sewed. Fifty small squares of gauze or cheese cloth, 4 × 4, one to be inserted each time a child is blindfolded
7. Three helpers for donkey stunt, one tally keeper for each game and one to blindfold. Tally card for tally keepers to record numbers of tails as they are pinned on
8. Mysteries. Twenty-five coins. Twenty-five articles. Ten-cent rings for girls, ten-cent knives for boys, or else neutral gifts like safety pins, clothes pins, tooth picks, paper clips
9. Box or basket to hold mysteries
10. Large box with cover, hole cut in top and back torn out, placed on table in front of helper, who records by number whether or not mysteries are returned and which, using initials, such as: (R)ing, (K)nife, (O)bject, (C)oin
11. Two helpers for mysteries stunt. The Mystery Man, the Recorder of Mysteries, and the Receiver of Mysteries
12. Twenty small boxes, $\frac{1}{2}$-lb. size, for bean relay
13. Two pounds white beans
14. Chalk
15. Tally card and counter for each helper
16. Five helpers, for bean relay
17. Refreshments. Ice cream cones in two sizes, if there is choice, or bricks cut in whole and half slices. Cookies, paper plates, napkins, spoons if bricks are used. Tags optional to designate amount of cream chosen
18. Prizes: two for donkey or archery, two for bean relay

II. The program in detail

1. As children arrive first helper directs them to room 1, registration booth, one at a time. They enter at one side, register name, have tag pinned on back, and leave by opposite side to room 2.

Two helpers, one to register and one to pin tags. Ten minutes.

2. As children come to room 2, helper in charge announces that each child will receive ten cents (or a smaller amount *ad lib.*) as a reward for doing this difficult stunt, and that this will be an admission fee to the rest of the games and will pay for ice cream if they want it at the end of the party.

Each child is seated at a table with pencil and a copy of the peeping test. One leader to each five children. As soon as each group finishes it is sent to room 1.

3. In room 1 the children register their choice of how their money is to be spent, as:

All for ice cream
All for charity
Half for each

If desired, someone representing a specific charity may be present.

The decision of each child may or may not be known by other children at the time of registering, according to the purpose of the test. A tag may be used to show whether the child has chosen to have ice cream. It may be marked with a sign known only to the helpers and designating the amount of cream chosen.

From room 1 the children are sent to room 3.

4. Room 3. Two donkey games on large white sheets on opposite sides of the room. Tails numbered 1 to 50 on table, with pins attached. Three helpers, one for each game to keep record and one to blindfold children as they come and to start them off. As each child finishes he is sent to room 4. Fifteen minutes.

5. Room 4. A general game, as Animal Blind Man's Bluff, Come with Me, or any circle games which will not be disrupted by having children join one at a time. One helper. Five minutes.

6. When all have reached room 4, they are formed in a large circle, facing in. Then comes the Mystery Man, a helper with a box or basket containing the coins and articles. He repeats the following words:

"The Mystery Man has come to town, come to town, come to town,
And he is wandering up and down, up and down the streets.

Oh, what has the Mystery Man for you?
Quick, put your hands behind you, do.
Touch it and see what he brought to you,
The Mystery Man who has a gift for every child he greets."

At the words, "Quick, put your hands behind you, do," all put both hands behind their backs and the Mystery Man puts something in each pair of hands, a coin to every even number and an object to every odd number, rings for girls and knives for boys, unless neutral objects are used.

When a child receives his object, he goes very quietly and mysteriously to the second helper, in another part of the room, and whispers what he thinks he has. The helper whispers to each child, directing him to go to room 1 and drop the mystery in the box. Here they must enter one at a time and leave by the opposite door. The helper at the table records quickly what is dropped, as her side of the box is open, and the number of the child. The child goes back to room 4, and the game is repeated, this time with the coins to the odds and objects to the evens. Fifteen minutes.

After the second time the helper in the booth sends the children to room 2, where games are in progress from which the children can be sent five at a time to room 3.

7. Room 3. The bean relay race has been set up, five rows of four boxes, each set five feet apart in straight lines, the lines as far apart as room allows.

4	4	4	4	4
3	3	3	3	3
2	2	2	2	2
1	1	1	1	1

Box 1 is empty. Box 2 has three beans, box 3, three beans, and box 4, ten or more.

Five children run at a time, with a helper for each row to count the runs with counters. One of them, or a sixth, is timekeeper. Thirty seconds are allowed for each heat. On the tally sheets both the runs and the number of beans in the home box at the end of the heat are recorded. As soon as the heat is finished, the children are sent back to room 2. The beans are then returned to the boxes ready for the next heat. Fifteen minutes.

8. Room 2. When the bean relay is over, all gather in room 2 for the refreshments, using the tables and chairs. As cream is served each child

is asked whether he gave his money to charity or kept it for cream and, if so, for a whole or half portion. Record is kept of what he does, and this is compared with what he chose to do when he first came in.

Prizes are awarded, and those that gave money to charity have the opportunity of deciding what they want it to go for. Fifteen minutes.

Total time, one hour and twenty-five minutes.

Total helpers, nine.

Note. — It will of course be necessary for the helpers to be alive to the situation and make themselves useful wherever the need seems to be greatest. Each party has its own adjustments to make as it goes along.

Modifications Required in Schools C and D

At school C the gymnasium was used. This was a large room and was spaced off instead of having the small rooms. A single group game pool was kept going a good deal of the time to handle the children not busy in one of the test games. In the Mystery Man game, a coin and an object were placed both at once in the hands of the children. No refreshments were served, and the peeping game was omitted. At school D the cottages were used, and these were too small to permit group games at all. Only three leaders could be used. Time was limited to one hour. In both groups there were two archery prizes and two bean relay prizes, the bean relay prizes being won by elimination.

APPENDIX I

CEI PUPIL DATA SHEET, SECTION I

Name.................................... Date.........................
Address................................. Telephone...................
School.................. Grade............... Age in yrs. and mos........

You may omit any questions you would rather not answer.

1. On the lines below write the names of your four best friends.
   1.................................... 3.............................
   2.................................... 4.............................
2. On the lines below write the names and ages of the playmates or companions you like best.
   1. Name.............................. Age...................
   2. Name.............................. Age...................
   3. Name.............................. Age...................
   4. Name.............................. Age...................

3. What do you usually do in the morning from the time you get up until you start for school?

....

....

....

4. What do you usually do from the time school is out in the afternoon until it is time to eat supper?

....

....

....

....

5. What do you usually do between supper and bedtime?

....

6. What is your usual bedtime?........What time do you get up?............

7. What do you usually do on Saturdays? Put down everything.

....

....

....

....

8. What do you usually do on Sundays? Put down everything.

....

....

....

....

9. What five or six outdoor games do you most enjoy playing?

1. .... 4. ....
2. .... 5. ....
3. .... 6. ....

10. What indoor games do you most enjoy?

1. .... 4. ....
2. .... 5. ....
3. .... 6. ....

11. About how many times a week do you go to the movies?.................

12. What kinds of pictures do you like best?...............................

....

....

13. What picture that you have seen lately have you thought about a good deal?

....

....

14. About how many times a week do you go to dances, parties, etc.?..........

15. What sort of books do you like best to read?..........................

16. What book or books have you read this past month just for the fun of it?...

....

....

....

17. What are you most afraid of?...

....

....

18. What clubs and societies do you belong to, such as Scouts, Camp Fire Girls, Pioneers, Christian Endeavor, and the like?
   1. Name of club.................. Name of leader......................
   2. Name of club.................. Name of leader......................
   3. Name of club.................. Name of leader......................

19. Since you first started to school you have had several teachers. Which ones have you liked best?
   1. .... 3. ....
   2. .... 4. ....

20. Which ones have you disliked or not got along with?
   1. .... 3. ....
   2. .... 4. ....

21. Why have you liked or disliked certain teachers?
   ....
   ....

22. Write down the three school subjects you like best. Put the one you like best of all on the first line, then the one you like next best, and then the one you like next best.
   1. .... Why do you like it?................
   2. .... Why do you like this?..............
   3. .... Why do you like this?..............

23. What school subject do you dislike or like least of all?
   .... Why? ....

24. Is there an automobile in your family?...............................

25. Who owns it?.................... Do you drive it?..................

26. Are you ever punished for doing something you know you ought not to have done?...
   About how often?................ By whom? ....
   What kinds of punishment do you the most good?........................
   ....
   What kinds of punishment do not do you any good?.....................
   ....

27. Do you earn any money?.......... How much a week?...................
   How do you earn it?..

28. How much do you save a week?...
   Do you keep it at home in your own bank?.............................
   Do you have an account in a real bank? ....

29. Does anyone give you an allowance each week? ....
   If so, who?..................... How much?..........................

30. Does your family take a vacation each summer, at the mountains, lakes, or shores, or traveling?...
   How long? ....

31. How many brothers have you?...... What are their ages?...............

32. How many sisters have you?....... What are their ages?...............

CEI PUPIL DATA SHEET, SECTION II

Name................................ School......................
Grade.. Date...............

Answer the questions by underlining "Yes" when you mean "yes," and by underlining "No" when you mean "no." You may omit any questions you would rather not answer.

1. Do you like dogs?..Yes No
2. Do you like horses?......................................Yes No
3. Do you like cats?..Yes No
4. Do you like any other animals?...........................Yes No
*5. Do you like to play with other children?........................Yes No
6. Do other children let you play with them?.......................Yes No
7. Did you ever run away from home?............................Yes No
8. Do people find fault with you much?..........................Yes No
9. Do you make your fingers sore by biting your nails?...............Yes No
10. Can you sit still without fidgeting?............................Yes No
11. Are you usually happy?......................................Yes No
12. Do you ever feel that nobody loves you?........................Yes No
13. Is it easy to get you cross over very small things?...............Yes No
14. Can you stand pain as quietly as others do?.....................Yes No
15. Do you feel that nobody quite understands you?..................Yes No
16. Do you find school a hard place to get along in?..................Yes No
17. Do you find home a hard place to get along in?...................Yes No
18. Do you usually feel well and strong?...........................Yes No
19. Do you feel well rested in the morning?.........................Yes No
20. Do you feel bored a good deal of the time?.......................Yes No
21. Do your teachers generally treat you right?......................Yes No
22. Do you have a hard time making up your mind about things?.......Yes No
23. Did you ever have a strong desire to steal things?................Yes No
24. Do you think you have more fears than most people?.............Yes No
25. Do you get tired of people easily?.............................Yes No
26. Did you ever copy the home work of another pupil and hand it in as your own?...Yes No
27. Have you done so more than once?............................Yes No
28. Were you late for school more than once in the last month?........Yes No
29. Did you ever give a false or "fake" excuse for being late for school?..Yes No
30. Did you give a "fake" excuse more than once?...................Yes No
31. Did you ever cheat on an examination?.........................Yes No
32. Have you cheated on an examination more than once?............Yes No
33. Did you ever cheat on any sort of test?.........................Yes No
34. Have you cheated on such tests more than once?.................Yes No
35. When the teacher asks you a question you can't answer, do you say, "I don't know"?..Yes No
36. Or do you put up a bluff?.....................................Yes No
37. Did you ever permit another pupil to copy your work and hand it in as his own?...Yes No

* Questions 5 to 25, inclusive, are reproduced by permission from the Woodworth-Mathews Personal Data Sheet, published by C. H. Stoelting Co., Chicago.

38. Have you done this more than once?............................Yes No
39. Do you remember taking some tests a short time ago given by a person not your teacher?.......................................Yes No
40. Do you remember taking one of these tests home with you to be done at home?..Yes No
41. Did you actually do this test all alone without getting help on it?....Yes No
42. If you did get help, was it from some person?...................Yes No
43. Or was it from a book or dictionary?...........................Yes No
44. Did you understand at the time that you were not to get help in doing the test?...Yes No
45. On some of these tests you had a key to correct your paper by. Did you copy any answer from the keys?.........................Yes No
46. Do you think that to do so is really cheating?..................Yes No
47. On any of these same tests did you copy answers from other pupils' papers?...Yes No
48. Do you think that to do so is really cheating?..................Yes No
49. Would it be right for you to cheat if you saw everyone or almost everyone else doing it?...Yes No
50. Would it be right if you thought the questions unfair?...........Yes No
51. Would it be right if you wanted to stand highest?...............Yes No
52. Would it be right if you wanted your class to get ahead of some other class?..Yes No
53. Do you think that cheating on tests or examinations is ever right?..Yes No
54. Do you think that many children cheat on school work?...........Yes No
55. If you think it is ever right to cheat, under what circumstances would you feel justified in doing so, or in what way do you think it is right?

....

....

56. If you did copy on any of these tests that you took a little while ago, or received any help you should not have received, just *why* did you do so?

....

....

57. Have you answered all the questions honestly and truthfully?......

APPENDIX J

DEFINITIONS OF CLASSIFICATIONS USED IN QUANTITATIVE SUMMARY *

I. Family
  A. Father
    1. Intelligence
      a. Diagnosed mental defect, socially recognized mental defect
      b. Inferior planning and reasoning ability, confusion of intellectual processes. Borderline
      c. Mediocre planning and reasoning ability. Dull, normal
      d. Fair planning and reasoning ability. Normal or good intelligence
      e. Good planning and reasoning ability. Superior
    2. Education
      a. Illiterate
      b. Literate, but little formal education
      c. Finished grades
      d. Finished high school or equivalent
      e. Finished college or equivalent
    3. Physical health
      a. Always sick. Complete debility. Any disease bound to terminate fatally
      b. Usually sick. Chronic disease of a lingering sort or one that incapacitates for work
      c. Occasionally sick. Poor nutrition condition and lack of vigor
      d. Fair health. Variability in physical condition. Freedom from physical illness and disease. History of serious contagious or debilitating disease in past. Death from nondebilitating disease following history of robust health
      e. Exuberant health. Good body tone. No history of serious contagious or debilitating disease

---

* Quoted in part, by permission, from *The Study of a Two-Year Intake of Dependent Children in Westchester County, New York*, Institute for Child Guidance.

4. Physical defects
    - *a.* Incapacity from physical defect
    - *b.* Slightly incapacitating or temporarily incapacitating defects or infirmity
    - *c.* History of defects of negligible character. History negative
    - *d.* No physical defects, sensory, motor, organic, or endocrine
5. Mental health
    - *a.* Epilepsy, psychosis in the home. Marked psychopathic condition disturbing to family life
    - *b.* Psychosis away from home. Psychopathic trends; neurosis or psychoneurosis; evidence of constitutional inferiority
    - *c.* Freedom from mental disease but with mild nervous disorder. Instability
    - *d.* Superior integration. Characteristic emotional stability
6. Church relationship
    - (1′) Attendance
        - *a.* No attendance
        - *b.* Occasional attendance
        - *c.* Irregular attendance
        - *d.* Regular attendance
    - (2′) Interest and activity
        - *a.* No religious interests. Occasional or habitual expression without control of behavior
        - *b.* Potential religious control of a formal kind. Routine religious observances
        - *c.* Occasional religious interests
        - *d.* Well-established religious principles. Active religious interests
7. Personality, habits, and behavior
    - *a.* Chronic excessive alcoholism. Primitive freedom of sex activity. Drug using. Jail or criminal record. Notorious antisocial behavior. Mendicancy, stealing, or other forms of vice not necessarily recognized in the community. Slovenly, lacking in appreciation of cleanliness and neatness. Incompetent. Totally inadequate to meet social requirements

b. Maladjustments having a direct relationship in handicapping child's personality. Occasional drinking sprees. Characteristic tendency to manifest sex irregularities
c. Inferior adjustment. Inclined to shirk responsibilities, but maladjustment not having direct bearing in handicapping child's personality. Variable and unsystematic habits
d. Well-organized individual, who is responsible in meeting his obligations. No antisocial behavior. Exemplary habits
8. Interests: civic and cultural
a. No civic or cultural interests
b. Occasional civic or cultural interests
c. Occasional civic and cultural interests
d. Active civic and cultural interests
B. Mother
Duplicates outline for Father
II. Economic status
A. Income
a. Very poor. Exist on relief. Income insufficient and relief necessary to supplement it. Precarious income inadequate to meet a standard of decency
b. Poor. Sufficient to maintain family without periods of unemployment and illness. Occasional relief necessary
c. Fair. Sufficient to maintain family during reasonable periods of unemployment and illness
d. Good. Sufficient to maintain family under ordinary emergencies. Comfortable standards of living
e. Very good. More than sufficient. Affords luxuries
B. Shelter
1. Ownership
a. Rent so high that dispossession is threatened or occurs frequently
b. Mortgage or rent out of proportion to income
c. Own home, mortgage easy to meet, or pay rent proportional to income
d. Own home free of mortgage
2. Size
a. More than two persons per room

        - *b.* Two persons per room
        - *c.* One and one half persons per room
        - *d.* One room or more per person
    - 3. Other physical aspects
        - *a.* Need of repairs so urgent that health and safety are menaced. Light and ventilation poor. Basement rooms
        - *b.* Repairs necessary for comfort, but not imperative for health. Light and ventilation poor
        - *c.* Repairs necessary for comfort, but not imperative for health. Light and ventilation good
        - *d.* Need of slight repairs, or no need of repairs. Light and ventilation good
  - C. Furnishings
    - *a.* Inadequate. Less than bare necessities. Furniture in poor condition
    - *b.* Inadequate. Bare necessities
    - *c.* Fairly adequate. All necessary furnishings, but in poor condition. Not much attempt to provide for comfort
    - *d.* Adequate and comfortable furnishings, somewhat limited by financial necessity
    - *e.* Luxurious, expenditure unrestricted by financial necessity
- III. Home life
  - A. Housekeeping
    - *a.* Slovenly and ugly
    - *b.* Haphazard
    - *c.* Drab. Not unattractive
    - *d.* Clean and orderly. Beautiful
  - B. Meals
    - 1. Sufficiency
        - *a.* Insufficient
        - *b.* Scanty
        - *c.* Sufficient
    - 2. Quality
        - *a.* Unhygienic
        - *b.* Poor
        - *c.* Balanced
    - 3. Palatability
        - *a.* Unpalatable

    - *b.* Passable
    - *c.* Delicious
  - 4. Regularity
    - *a.* Irregular
    - *b.* Delayed
    - *c.* Regular and prompt
  - 5. Mood
    - *a.* Irritable
    - *b.* Indifferent
    - *c.* Happy
- C. Sleeping conditions for child
  - *a.* Very poor. Shares bed with two or more persons, or room with more than three. One window, open at night; one or more windows, closed at night; no outside window. Noisy
  - *b.* Poor. Shares bed with one person; no more than three in room. One window, closed at night. Noisy or quiet
  - *c.* Fair. Shares bed with one person; no more than three in room. At least one window, open at night. Noisy
  - *d.* Good. Shares bed and room with one person. At least one window, open at night. Quiet
  - *e.* Very good. Has bed and room alone. One or more windows, open at night. Quiet
- D. Language spoken in home
  - *a.* Foreign language the language of the home with no, or only occasional, use of English
  - *b.* English spoken for the most part by both parents. Occasional use of foreign language by both parents. English spoken by one parent almost exclusively and not at all by the other
  - *c.* English spoken exclusively by one parent and by the other for the most part. Foreign language occasionally used by one
  - *d.* English spoken exclusively. Any other language purely cultural
- E. Employment of mother
  - *a.* Mother working away from home by the week, or employed at home on sweatshop work involving children's assistance, or engaged at occupation morally or physically bad for child

- *b.* Mother working away from home several days a week
- *c.* Mother gainfully employed at home on work not involving children's assistance. Occasional work away from home
- *d.* Occasional gainful employment at home; occupation not bad for child
- *e.* Not contributing to family support

F. Integrity of family life
- *a.* Family group intact, with relatives or outsiders of bad character or destructive influence in home. Same for family group not intact
- *b.* Family group intact or not intact, with outsiders, not relatives, of good character in home. One parent or older sibling managing alone partially or temporarily with or without aid of sibling or relative
- *c.* Family group intact or not intact, with one or more relatives of good character living in home, of negative influence on child. One parent widowed and managing adequately with assistance of older sibling, relative, or step-parent
- *d.* Family group intact; children living with own parents and no others (aside from domestic help) in the home, or only relatives having constructive influence on child

G. Marital status
- *a.* Chronically deserting parent. Promiscuous mother
- *b.* Unmarried couple. Parents separated and unstable household resulting. Either parent deceased and the remaining parent remarried to an unfriendly step-parent. Parent occasional deserter. Unmarried mother maintaining stable home
- *c.* Parents married before or after the birth of their children, living continuously together except for few temporary periods of separation. One parent deceased and the remaining parent not married or married to a step-parent whose relation to the children is friendly. Acknowledged common-law marriage
- *d.* Parents married before the birth of their children and living continuously together

H. Mutual adjustment of parents
- *a.* Completely antagonistic. Constant quarreling, misunderstanding, and abuse. Infidelity

  - *b.* Complete domination of one parent by the other. Continual suspicion of either parent's fidelity
  - *c.* Occasional quarreling of an inconsequential sort. Tendency to suspicion of fidelity of either parent
  - *d.* Supremely happy, harmonious relationship
- I. General atmosphere of household
  - *a.* Constant friction and bickering
  - *b.* Members get along together
  - *c.* Gracious coöperation
- J. Attitude of parents toward child
  - 1. Personal relationship
    - *a.* Grudging, unsympathetic, cold, and antagonistic. Indifferent, willing to exploit child
    - *b.* Selfish, animal-like affection, varying in degree and dependability
    - *c.* Generous, sympathetic, but fostering infantilism. Lack of warmth. Partiality to other children. Tendency to repress
    - *d.* Generous and intelligently sympathetic. Effort made to develop child's affection and independence
  - 2. Ideals and expectancies
    - (1′) Degree of ambition
      - *a.* No interest in child's future
      - *b.* Mild interest in his future
      - *c.* Ambitious for child
    - (2′) Occupation desired for him
      - *a.* Antisocial occupation
      - *b.* Nonsocial occupation
      - *c.* Prosocial occupation
    - (3′) Cultural aspirations
      - *a.* No interest in child's cultural development
      - *b.* Mild interest in his cultural training
      - *c.* High cultural ambitions for him
- K. Parental discipline
  - *a.* No attempt at supervision and control. Efforts at discipline unintelligent and abusive
  - *b.* Inadequate discipine on the part of both parents. Conflicting standards of discipline or discipline left to one parent, who is variable and uneven and whose discipline for the most part is not intelligent or kind

  - *c.* Kind and intelligent discipline, but left to one parent. Disciplined equally by both parents, intelligent for the most part, but variable
  - *d.* Kind and intelligent discipline and good example. Parents in agreement about discipline and supervision

- L. Recreation and amusements taken together
  - *a.* Family as a group never engages in recreational activities. Occasionally engages in those of a harmful nature
  - *b.* Family as a group occasionally engages in recreation stultifying and unpurposeful, not intrinsically bad
  - *c.* Family as a group frequently engages in unpurposeful, unbalanced recreation. One parent and children engage in well-chosen recreational activities
  - *d.* Family as a group frequently engages in recreation stimulating to the intellectual, æsthetic, social, and physical development of the child

APPENDIX K

FACE SHEET AND RATING SCALE FOR STUDY OF HOMES

Name....................Date....................No.............

Alias..........................Sex: M F Color: W B Y

Address................Age................Date of birth.............

School.......................Grade................Worker.........

First Name	Age	Nationality	Occupation or School Grade
1. Father			
2. Mother			
3. Stepfather			
4. Stepmother			
5.		Intelligence	
6.			
7.			
8.			
9.			
10.			
11.			

Others in Household	Kinship or Status	Relevant Information

Relatives	Address	Kinship	Relevant Information

Sources for Further Information	Address	Comment

Name...................... No....

QUANTITATIVE SUMMARY

I. Family

A. Father

1. Intelligence

Mental defect	Borderline	Dull normal	Good	Superior

2. Education

0				100
Illiterate	Literate, but little formal education	Finished grades	Finished high school	Finished college

3. Physical health

0				100
Always sick	Usually sick	Occasionally sick	Fair health	Exuberant health

4. Physical defects

0			100
Incapacitating	Slightly incapacitating	Defects of negligible character	No physical defects

5. Mental health

0			100
Epilepsy. Psychosis	Neurosis. Psychopathic trends. Constitutional inferiority	Mild nervous disorder. Instability	Superior integration. Emotional stability

6. Church relationship

a. Attendance

0			100
No attendance	Occasional attendance	Irregular attendance	Regular attendance

b. Interest and activity

0			100
No religious interests	Routine religious observances	Occasional religious interests	Well-established religious convictions

7. Personality and behavior

0			100
Notorious antisocial behavior	Occasional sex irregularities. Occasional drinking sprees	Inclined to shirk responsibilities. Variable habits	Responsible. No antisocial behavior. Exemplary habits

8. Interests

a. Civic and cultural

0			100
No civic or cultural interests	Occasional civic or cultural interests	Occasional civic and cultural interests	Active civic and cultural interests

b. Political

0		100
No political interests	Occasional political interests	Active political interests

B. Mother

1. Intelligence	Mental defect	Borderline	Dull normal	Good	Superior
2. Education	0				100
	Illiterate	Literate, but little formal education	Finished grades	Finished high school	Finished college
3. Physical health	0				100
	Always sick	Usually sick	Occasionally sick	Fair health	Exuberant health
4. Physical defects	0				100
	Incapacitating	Slightly incapacitating	Defects of negligible character		No physical defects
5. Mental health	0				100
	Epilepsy. Psychosis	Neurosis. Psychopathic trends. Constitutional inferiority	Mild nervous disorder. Instability		Superior integration. Emotional stability
6. Church relationship					
a. Attendance	0				100
	No attendance	Occasional attendance	Irregular attendance		Regular attendance
b. Interest and activity	0				100
	No religious interests	Routine religious observances	Occasional religious interests		Well-established religious convictions
7. Personality and behavior	0				100
	Notorious antisocial behavior	Occasional sex irregularities. Occasional drinking sprees	Inclined to shirk responsibilities. Variable habits		Responsible. No antisocial behavior. Exemplary habits
8. Interests					
a. Civic and cultural	0				100
	No civic or cultural interests	Occasional civic or cultural interests	Occasional civic and cultural interests		Active civic and cultural interests
b. Political	0				100
	No political interests		Occasional political interests		Active political interests

II. Economic status

A. Income

0				100
Insufficient. Relief necessary all or part of time	Occasional relief necessary	Sufficient	Sufficient for comfortable standards of living	More than sufficient

B. Shelter

	0			100
1. Ownership	Dispossession frequent	Mortgage or rent out of proportion to income	Own home. Mortgage easy to meet or rent proportional to income	Own home free of mortgage
2. Size	More than two persons per room	Two persons per room	One and one-half persons per room	One room or more per person
3. Other physical aspects	Repairs so urgently needed that health is menaced. Basement rooms	Repairs necessary. Light and ventilation poor	Need of essential repairs. Light and ventilation satisfactory	Physical aspects entirely satisfactory

C. Furnishings

0				100
Inadequate. Less than bare necessities	Inadequate. Bare necessities	Fairly adequate. All necessities, but in poor condition	Adequate and comfortable	Luxurious

III. Home life

A. Housekeeping

0			100
Slovenly and ugly	Haphazard	Drab. Not unattractive	Clean and orderly. Beautiful

B. Meals

	0		100
1. Sufficiency	Insufficient	Scanty	Sufficient
2. Quality	Unhygienic	Poor	Balanced
3. Palatability	Unpalatable	Passable	Delicious
4. Regularity	Irregular	Delayed	Regular and prompt

5. Mood

0		100
Irritable	Indifferent	Happy

C. Sleeping conditions of child

0				100
Very poor	Poor	Fair	Good	Very good

D. Language

0			100
Language of home foreign	Both foreign language and English used	Foreign language occasionally used	English spoken exclusively

E. Employment of mother

0				100
Working out by week. Sweatshop work at home. Occupation bad for children	Working out several days	Work at home; children not involved. Occasional work out	Occasional work at home	Not contributing to family support

F. Integrity of family life

0			100
Family group intact; outsiders of bad character in home. Same for group not intact	Intact or not intact, with outsiders of good character in home. One parent or older child managing alone	Intact or not intact. Relative of negative influence in home. One parent managing adequately	Family group intact. No others in home or only relatives with constructive influence

G. Marital status

0			100
Chronically deserting or promiscuous	Separated. Unmarried couple	Temporary periods of separation	Living continuously together

H. Mutual adjustment of parents

0			100
Completely antagonistic. Abuse. Infidelity	Domination of one by the other. Suspicion of either's fidelity	Occasional quarreling of inconsequential sort	Supremely happy

I. General atmosphere of household

0		100
Constant friction and bickering	Members get along together	Gracious coöperation

J1. Attitude of father toward child

	0			100
1. Personal relationship	Grudging, antagonistic. Willing to exploit	Selfish affection varying in degree or dependability	Generous, sympathetic, but fostering infantilism. Tendency to repress	Generous. High degree of insight. Tries to develop child's affection and independence
2. Ideals and expectancies				
(1) Degree of ambition	No interest in child's future	Mild interest in his future		Ambitious for child
(2) Occupation desired for him	Antisocial occupation		Nonsocial	Prosocial
(3) Cultural aspirations	No interest in child's cultural development	Mild interest in his cultural training		High cultural ambitions

J2. Attitude of mother toward child

	0			100
1. Personal relationship	Grudging, antagonistic. Willing to exploit	Selfish affection varying in degree or dependability	Generous, sympathetic, but fostering infantilism. Tendency to repress	Generous. High degree of insight. Tries to develop child's affection and independence
2. Ideals and expectancies				
(1) Degree of ambition	No interest in child's future	Mild interest in his future		Ambitious for child
(2) Occupation desired for him	Antisocial occupation		Nonsocial	Prosocial
(3) Cultural aspirations	No interest in child's cultural development	Mild interest in his cultural training		High cultural ambitions

K. Discipline

0			100
No attempt at supervision. Discipline unintelligent and abusive	Inadequate. Divided authority	Kind and intelligent, but left to one parent. Intelligent, but variable	Kind and intelligent. Good example. Parents in agreement

L. Recreation taken together

0			100
Family as a group never engages in recreation	Family as a group occasionally engages in unpurposeful recreation	Family as a group frequently engages in unpurposeful recreation	Family as a group frequently engages in well-chosen recreation

APPENDIX L

THE BURDICK APPERCEPTION TEST*

SCALE A

Name...Date....................

Grade............School....................Age..........yrs...........mos.

Home address..

Section I

Put a cross (X) before the *best* answer to each of the following questions. Mark only *one* answer to each question. Be sure you find the best one of the four.

1. What is a flute?
   [ ] (*a*) An anchor
   [ ] (*b*) A plant
   [ ] (*c*) A musical instrument
   [ ] (*d*) A bird
2. What is a demi-tasse?
   [ ] (*a*) A piece of furniture
   [ ] (*b*) A card game
   [ ] (*c*) A cup of coffee
   [ ] (*d*) A pretty dress
3. What is a high boy?
   [ ] (*a*) A college graduate
   [ ] (*b*) A chest of drawers
   [ ] (*c*) An overgrown child
   [ ] (*d*) A kind of drink
4. What is a Chippendale?
   [ ] (*a*) An old piece of furniture
   [ ] (*b*) A small bird
   [ ] (*c*) A kind of tree
   [ ] (*d*) A waterfall

---

*Copyright 1927, Institute of Educational Research, Teachers College, Columbia University, New York.

5. What do you say when you are introduced to an older person?
    - [ ] (*a*) "Pleased to meet you."
    - [ ] (*b*) "How do you do, Mr. ——."
    - [ ] (*c*) "Happy to make your acquaintance."
    - [ ] (*d*) "Charmed."
6. When should toothpicks be passed?
    - [ ] (*a*) During the meal
    - [ ] (*b*) Before the meal
    - [ ] (*c*) Never
    - [ ] (*d*) At the end of the meal
7. Where is tapestry usually found?
    - [ ] (*a*) In the kitchen
    - [ ] (*b*) In the bathroom
    - [ ] (*c*) In the parlor
    - [ ] (*d*) In the cellar
8. Where are orchids usually bought?
    - [ ] (*a*) From the grocer
    - [ ] (*b*) From the fruit dealer
    - [ ] (*c*) From the florist
    - [ ] (*d*) At the dry goods store
9. What is an Étude?
    - [ ] (*a*) A magazine
    - [ ] (*b*) A piece of furniture
    - [ ] (*c*) A movie
    - [ ] (*d*) A musical instrument
10. What is a cello?
    - [ ] (*a*) A basement
    - [ ] (*b*) A dessert
    - [ ] (*c*) A musical instrument
    - [ ] (*d*) An electric light bulb
11. What is a governess?
    - [ ] (*a*) The wife of a governor
    - [ ] (*b*) A servant on a ship
    - [ ] (*c*) A person who takes care of children
    - [ ] (*d*) Any woman officer
12. In what book is the poem about the "Jabberwocky"?
    - [ ] (*a*) "Eight Cousins"
    - [ ] (*b*) "Through the Looking Glass"
    - [ ] (*c*) "The Water Babies"
    - [ ] (*d*) "Swiss Family Robinson"

Section II

In each of the sentences below draw a line under *one* of the four words that makes the sentence true and right.

Samples: A Buick is a kind of......cigar — tree — automobile — typewriter.
A piano is a......sewing machine — musical instrument — tool — car.

Begin here:

1. A buffet is usually found in the........parlor........kitchen........hall ....dining room.
2. Beethoven was famous as a........poet........musician........painter ....actor.
3. The Arabian Nights are........soldiers........stories........stones ....pictures.
4. Mahogany is the name of a........city........machine........wood ....river.
5. Paderewski is the name of a........pianist........singer........composer ....orchestra conductor.
6. The Book of Proverbs is in........Shakespeare........Milton........ Virgil........the Bible.
7. Genesis is in........the Old Testament........Shakespeare........Chicago ....New York State.
8. The "St. Nicholas" magazine comes........weekly........monthly ....quarterly........at Christmas.
9. Geraldine Farrar is a famous........singer........author........violinist ....painter.
10. A Steinway is a........book........magazine........driveway........ piano.
11. Chopin was famous as a........writer........painter........poet........ composer.
12. Spaulding's sells........books........sporting goods........furniture ....jewelry.
13. Mischa Elman is a famous........actor........pianist........singer ....violinist.
14. The Atlantic Monthly is a........magazine........calendar........ battleship........lighthouse.
15. The "Child's Garden of Verses" is by........Kipling........Stevenson ....Sankey........Guest.
16. The "Age of Innocence" is the name of a........song........picture ....poem........movie.
17. "The Nature Magazine" comes........weekly........monthly........ quarterly........semi-annually.
18. The Delineator is a kind of........rug........radio........magazine ....tool.
19. Sonora is the name of a........piano........cigar........talking machine ....Spanish lady.
20. Schubert was famous as an........organist........singer........violinist ....composer.

Section III

Name all the furniture that belongs in a well-furnished dining room. Write your answer below.

....

....

....

....

....

....

Section IV

The statements below are either true or false. If true, draw a line under the word "True." If false, draw a line under the word "False."

Sample: In buying tickets, one should stand in line...........True False

Begin here:

1. A waiter, in passing a dish, offers it at your right hand......True False 1
2. If soup or any liquid is too hot, blow on it slightly to cool it....True False 2
3. When eating meat, one should cut it all up before beginning to eat..True False 3
4. If your feet do not touch the floor, you should rest them on the chair rounds..True False 4
5. Food may be carried to the mouth with either a knife or a fork.True False 5
6. One should assist the hostess by stacking the dishes.........True False 6
7. When not interested in what another person is saying, one should say frankly that he doesn't want to hear any more..True False 7
8. A knife should be used to cut lettuce at the table...........True False 8
9. When eating bread and butter, spread butter on the whole slice of bread before eating any of it.........................True False 9
10. In helping yourself to sugar, always use your own spoon.....True False 10
11. One should give attention to another who is talking to him whether he is interested or not.........................True False 11
12. It is bad manners to look over the shoulder of one who is reading or writing.......................................True False 12
13. If a guest accidentally knocks his glass of water over, the hostess should laugh and call it a joke.......................True False 13
14. The wearing of much jewelry marks a girl as a person of poor taste..True False 14
15. Soup should be taken from the side of the spoon............True False 15

Section V

Write on the lines the answers to these questions:

1. What do you expect to be when you grow up?

....

2. What does your father expect you to be when you grow up?

....

3. What does your mother expect you to be when you grow up?

....

Section VI

Some of these sentences tell about things which are usual or which happen often, and some of them tell about things which are not usual or which do not happen often. If what a sentence says is usual, draw a line under the word "Usual." If what a sentence says is not usual, draw a line under the words "Not usual."

Sample: Robert goes to school............................Usual Not usual

Begin here:

1. Sometimes the father reads stories to the children.........Usual Not usual
2. The mother slaps the children and screams at them to make them mind..Usual Not usual
3. When the child kicked and screamed, the mother let her do whatever she wanted................................Usual Not usual
4. The family took some of their friends to ride in an automobile..Usual Not usual
5. The woman quarreled with her husband every day........Usual Not usual
6. Each child in the family has a separate bed..............Usual Not usual
7. The mother supports the family by working out by the day..Usual Not usual
8. When the children are at home they fight like cats and dogs..Usual Not usual
9. The father made his children obey by hitting them over the head..Usual Not usual
10. The children drive their mother wild with their noise......Usual Not usual

Section VII

Find the one word in each line which most nearly describes the first word in the line. When you have found this word, draw a line under it, as shown in sample.

Sample: tiger..............wild, smooth, brown, fierce, friendly

Begin here:

1. job...........easy, good, hard, pleasant, rotten
2. chair.........soft, old, high, straight, rocking
3. father.........stern, brutal, kind, cranky, sympathetic
4. candy.........fudge, scarce, chocolate, box, bonbons
5. house.........cold, happy, quiet, lovely, little
6. brother.......jealous, tough, kind, sneaky, stingy
7. suit...........new, bright, small, pretty, torn
8. picture........big, book, framed, beautiful, newspaper
9. sister.........mean, gentle, angry, kind, selfish
10. town.........dark, dull, gay, awake, big
11. sleep..........quiet, troubled, dreams, sound, afraid
12. play..........rough, fun, slow, lonely, noisy
13. mother........loving, cross, unjust, mean, good
14. piano.........lessons, forgotten, Chopin, player, dance

Section VIII

Here are some duties which must be performed for nearly every household. Write on each line the person or persons whose regular task it is to do the thing named.

Begin here:

1. To wash the dishes. . . . .
2. To take care of the baby. . . . .
3. To earn money to support the family. . . . .
4. To get the meals. . . . .
5. To set the table. . . . .
6. To help the children get ready for school. . . . .
7. To go on errands. . . . .
8. To help the children with their lessons. . . . .
9. To clean the rugs. . . . .
10. To dust the furniture. . . . .
11. To clean the house. . . . .
12. To look after the children when they get home from school. . . . .
13. To dry the dishes. . . . .
14. To open the door when the doorbell rings or somebody knocks. . . . .
15. To serve the meals. . . . .
16. To wash the clothes. . . . .
17. To put the children to bed. . . . .
18. To teach the children how to behave. . . . .

Section IX

The situations which are described below have actually happened to children. Read the facts given. Then write what you think happened next. Never mind about what ought to have happened. Just guess what actually did happen. Write your answers on the lines.

1. Mary received a very poor mark in her school work. She took the report card home and showed it to her father. What did her father do?

. . . .

. . . .

2. It was a cold winter's night, and a snowstorm was raging. It was a whole hour before bedtime. The children said, "Mother, what shall we do next?" What did their mother say?

. . . .

. . . .

3. Amy's mother asked her to go to the store on an errand. Amy was reading and did not wish to be bothered. What did her mother do?

. . . .

. . . .

4. Thomas was nine years old. He was angry because his mother would not let him go to the movies one afternoon. He kicked the furniture and threw some dishes on the floor. What did his mother do?

. . . .

. . . .

5. Helen and her brother Paul were playing games, when their father came in and asked Paul to fill the wood box. Paul sulked and said he wouldn't do it. What did his father do?

....

....

6. Adrian became angry at his brother and threw a heavy box at him. What did their mother do?

....

....

7. Uncle Jack was coming to dinner and to spend the evening. Richard's father and mother wished to give him a very good time. What did they do in the evening?

....

....

8. Elizabeth was eight years old. Her parents were going away for a short vacation, leaving Elizabeth at home with her older brother and their aunt. Elizabeth threatened to run away if her parents did not take her with them. What did they do?

....

....

9. Edward's father had told him to come home immediately after school each night. One day Edward went for an automobile ride with a chum and did not get home until eight o'clock. What happened when he reached home?

....

....

10. John and his sister were quarreling. Their father came into the room. What did he do?

....

....

Section X

Write on the lines the words for which the letters stand. If you don't know, guess.

Sample: U. S. stands for United States.

Begin here:

1. B.A. stands for ....
2. Adv. stands for ....
3. A.M. stands for ....
4. Messrs. stands for ....
5. F.O.B. stands for ....
6. B.C. stands for ....
7. Mgr. stands for ....
8. Ltd. stands for ....
9. Inst. stands for ....
10. B.S. stands for ....
11. Agt. stands for ....

12. P.M. stands for..
13. M. stands for..
14. Ph.D. stands for...
15. A.D. stands for..
16. R.S.V.P. stands for..
17. Inc. stands for..
18. H.R.H. stands for..
19. F.O.R. stands for..
20. I.Q. stands for..
21. Sec. stands for..
22. COPEC stands for...

Section XI

Suppose a good fairy or magician were to grant you three wishes. What would your wishes be?

Write your answers here:

1. ....
2. ....
3. ....

SCALE B

This may be done at home. If the pupil cannot do it himself, he should get his parents or an older brother or sister to help him.

Name..............................Grade....................
School.............................Date.....................

Section I

How good are you at guessing things? Do you know the game called "Twenty Guesses"? Somebody thinks of an object in a room, and the other people may have twenty guesses as to what it is. This time an object belonging to a living room has been selected. Each pupil may have twenty guesses as to what it is. After the blanks are collected, the teacher will tell the class what the object is. Put your guesses here:

1. ....
2. ....
3. ....
4. ....
5. ....
6. ....
7. ....
8. ....
9. ....
10. ....
11. ....
12. ....
13. ....
14. ....
15. ....
16. ....
17. ....
18. ....
19. ....
20. ....

Section II

Below are some topics which might be used for English compositions.

If you think you know enough about the topic to write a good story or composition about it, put a check mark in the first column, which says, "Could write a lot on this."

If you do not know very much about the topic but could write a fairly good story or composition on it, put a check mark in the second column, which says, "Could write a little on this."

If you do not know anything about the topic and could not write on it at all, put a check mark in the third column, which says, "Could not write on this at all."

As soon as you have marked topic 1, read topic 2 and decide which column to put your check mark in. Then go on and do all the rest.

	Could write a lot on this	Could write a little on this	Could not write on this at all	
Sample: The Street Where I Live	✓			
Begin here:				
1. My Workshop (or Playroom) at Home				1
2. How to Put It over the Cop				2
3. Around the Fireplace				3
4. How to Play Poker				4
5. Woods in Springtime				5
6. Birds I Know				6
7. My Pets (or Pet)				7
8. With the Gang in the Back Streets				8
9. My Birthday Party				9
10. A Pool-Room Adventure				10
11. A Holiday with My Father (or Mother)				11
12. How to Locate the North Star				12
13. How to Build a Campfire				13
14. How to Start a Savings Account				14

Section III

Each of the words given below has another word (or words) which is usually used with it. Fill in the blank spaces. For example, if the word were "Santa," you would write "Claus."

These are names of magazines:

1. Snappy........................
2. World's........................
3. American........................
4. Radio........................
5. Scribner's........................
6. Popular........................
7. True........................
8. The House........................
9. The Saturday Evening...........
10. Detective........................
11. The Woman's Home............
12. Vanity........................
13. The Red........................
14. The Ladies'...................

15. Good........................
16. Yale........................
17. Harper's....................
18. The Literary................
19. House and Garden............
20. Child.......................
21. Century.....................
22. Review of...................
23. National....................
24. Boy's.......................

These are names of books:

1. Mother......................
2. Anderson's..................
3. Grimm's.....................
4. Little Lord.................
5. Thunder on the..............
6. Last of the.................
7. When We Were Very...........
8. Rebecca of..................
9. With Lee in.................
10. Wild........................
11. Strive and..................
12. Trader......................

These are names of musicians:

1. Joseph......................
2. Louise......................
3. Alma........................
4. Galli.......................
5. John........................
6. Schumann....................
7. Harry.......................
8. Irving......................

These are names of songs:

1. Don't Bring.................
2. I Don't Care What...........
3. Say it While................
4. Oh Boy! What a..............

These are names of actresses, actors, and movie stars:

1. Billie......................
2. Bebe........................
3. Baby........................
4. Jackie......................
5. Richard.....................
6. Charlie.....................
7. Tom.........................
8. Harold......................
9. Douglas.....................
10. David.......................
11. Jane........................
12. John........................
13. Ethel.......................
14. Otis........................

Section IV

All of us like to have certain people with us at certain times of the day and other people with us at other times. Sometimes we would rather have no one with us.

In the following sentences, write in the words which show the person or persons that you prefer to have with you. The samples show you how to do it.

Samples:

When playing games I prefer to have......*my classmates*......with me.

When looking at a beautiful sunset I prefer to have....*no one*.....with me.

Begin here and write in the spaces the person or persons, if any, you prefer to have with you in each case.

1. When I go to the movies I prefer to have..........................with me.
2. When I go on a picnic I prefer to have...........................with me.

3. When I go away on a summer vacation I prefer to have............with me.
4. When I go to church I prefer to have............with me.
5. When I eat dinner I prefer to have............with me.
6. In the evening I prefer to have............with me.

Section V

The statements below are true or false. If true, draw a line under the word "True." If false, draw a line under the word "False."

Sample: One should keep his clothes brushed clean............True False

Begin here:

1. If a plate is served to you at the table, keep it unless told to pass it on............True False 1
2. One should not read letters addressed to another person unless asked to............True False 2
3. We should be more careful of our own books than of borrowed ones............True False 3
4. A young person should go before an older person on entering a room............True False 4
5. One should use a fork to take bread from the plate............True False 5
6. A gentleman should always rise when addressed by a woman who is standing............True False 6
7. It is considered bad manners to turn and look at a person who has passed in the street............True False 7
8. Pie should be eaten with a spoon............True False 8

INDEX OF TOPICS AND PROPER NAMES

The references in the Index which are printed in light-face figures are for Book One, those in italics for Book Two.

Administration of tests, 104–130, *248–268*

Age, differences in deception, 168–181, *144–154;* norms for Speed tests, *38–39*

Amounts of deception, *see* Scores, Specificity, *and the names of various tests*

Apperception test, *see* Burdick

Associates, 240–241. *See also* Friends, Sociability

Athearn, W. S., 34

Athletic contests, administration of, 124–125; amount of cheating on, *216;* description of, 82–85; directions for giving, *262–264;* reliability of, 136, *97;* results of, *81–82;* scoring of, 85–86, *41;* standardization of, *39–41;* validity of, *122, 131–132*

Attendance, *see* School, Sunday schools, Motion pictures

Attitudes, SA test, 98–102; scaling of and specificity of, 387–390, *221–238*

Benussi, V., *245*

Berry, C. S., *248*

Bibliography, *245–248*

Bird, Charles, 45, 51, *245*

Blatz, W. E., *245*

Books-Read test, 37–38

Burdick, Edith M., 206

Burdick Apperception test, *287;* description of, 205–210; reliability of, 210; scores of honest and dishonest groups on, 299–300; validity of, 210–212. *See also* Correlations

Burtt, H. E., *245, 246*

Cady, V. M., 34, 35, 61, 62, *246*

Cannon, W. B., *246*

Case history method, 6–7. *See also* Dishonest cases, Homes, Honesty

Catholics, 253–255, 284, 286, 294, 296, 297, 357

Chambers, E. V., 45, *246*

Chapman, J. C., 195

Character, education in, 339–367, 412–414, *197–209;* factors in, 7–8; measurement of, 3–11; research in, 3–4; statistical study of, 149–165, *5–11;* tests, *see* Cheating, Lying test, Stealing, Techniques, Tests

Character Education Inquiry, 3, 8–11

Charters, W. W., 25–26

Cheating, ratio (CT ratio), 179–180, 187, 214, 224, 318, 345–352, 362, 386, *77–81, 128–133, 141, 145, 163, 165, 180, 198–205, 220;* tests, *see* Athletic contests, Coördination tests, Copying tests, Duplicating technique, Home test, IER achievement tests, Party games, Peeping tests, Puzzle Performance tests, Speed tests, Techniques, Tests. *See also* Correlations, Deceit, Deception, Honesty

Church, *see* Denomination, Religious affiliation, Sunday schools

Classroom cheating, tests for, *see* Coördination tests, IER achievement tests, Puzzle Performance tests, Speed tests

Classroom groups, *see* Group, Morale, School, Teacher influence

Coe, G. A., 378

Common factors, 380–390, *211–243*

Comparable scores, 154–155, *134–135*

Conclusions, general, 14–15, 407–412

Conduct, specificity of, 377–387, *211–221;* tests of, 34–45. *See also* Cheating, Deportment, Lying test, Reliability, Stealing, Tests, Validation of tests

Confessions, 139. *See also* Honesty, Lying test

Coördination tests, administration of, 122–124; amounts of cheating on, *215–216;* description of, 61–65; directions for giving, *253–255;* reliability of, 136, *97;* results of, *72–76;* scoring of, 64, *14–15;* separate tests compared, *218;* standardization of, 64, *14–15;* validity of, 122, 130–132. *See also* Peeping tests

Copying tests, 49–51

Correction, formulas, *99–105;* problem of, 26–27

Correlation, coefficient of, as a device for measuring relations, 158–163; formulas for correcting coefficients of, *99–105;* scattergrams illustrating, 161–163. *See also* Formulas

Correlations between: Burdick score and age, 218, *166;* Burdick score and intelligence, 218, *166;* Burdick score and Sims score, 218, *166;* cheating and age, 170–180, *145–147*, *182*, *205;* cheating and Burdick score, 219, 228, *166–167;* cheating and good manners, 218, 228; cheating and home ratings, 220–221; cheating and intelligence, 183–189, *135–143*, *165*, *182;* cheating and motion picture attendance, 281; cheating and occupational level, 221–224, 227–229, *161;* cheating and physical condition, 192; cheating and school achievement, 270; cheating and school attendance, 268, 314, *205;* cheating and school deportment, 272; cheating and school grade, 258–259, *155–157;* cheating and school retardation, *261–264;* cheating and Sims score, 214, 216, 227, 228, *165*, *182;* cheating and suggestibility, 280; cheating and Sunday-school attendance, 359, 361, 362; cheating and teachers' ratings for honesty, *110–111*, *115–117;* cheating and test ability, 395–396, *147*, *239*, *241;* intercorrelations of deception tests, 382–385, *123*, *212;* intelligence and Burdick score, *166;* intelligence and home background, 189; intelligence and ratings, *114;* intelligence and scaled attitudes, *236;* intelligence and school deportment, 273; intelligence and Sims score, *165;* intelligence and suggestibility, 188, 280; lying and age, 177, *145;* lying and grade, *155;* lying and intelligence, 186, *142*, *143;* siblings, in cheating, 232, 244, *173;* siblings, in intelligence, 244, *173;* stealing and age, *145;* stealing and intelligence, *142*, *143*

Criteria, of testing procedures, 47–48; of tests, *see* Validation of tests

Cultural background, analysis of, 206–207, 284–287, *273–280;* methods of measuring, 194–212; ranges of, 238; relation to deception, 213–229, *159–167; versus* biological factors, 230–245, *172–178; versus* progressive school methods, 316–320, *179–185. See also* Burdick Apperception test, Correlations, Homes, ratings of, Occupation of parents, Sims Score Card, Tests

Deceit, as adaptative behavior, 20–23; as a social problem, 15, 414; definition of, 377–379; factors associated with, 167–168, 408–412; measurement of, 28–46; methods of study of, 5–12, 23–26; significance of, 11, 19–22, 377–380; situations provoking, 23–26; summary of studies in, 407–414. *See also* Attitudes, Deception, Honesty, Techniques, Tests

Deception, amounts of, 315, *215–216;* analysis of, 402–405; changes in, 132–134, 324–329, 332–333, 368–375, *88–89, 91, 192–196, 209–210;* motives for, 22, 391–401, *239–243;* techniques for detecting, 28–32; test situations 402–405. *See also* Cheating, Deceit, Lying test, Reliability, Stealing, Techniques, Tests, Validation of tests

Delinquency, 23–25, 27, 32–33, 283–311, 414

Denomination, 253–256, *167–170*

Deportment, 299–300. *See also* School

Diagnosis, 144, 308–311, 414

Dishonest cases, 283–311

Distributions, of cheating scores, 385–387, *219–221;* of honest ability scores, *14–15, 17, 23;* use of, 151–154

Duplicating technique, 51–55, *12, 130, 221–225, 248–249. See also* Techniques

Economic factors and deception, 213–229

Eddy, M. W., *246*

Emotional condition, 192–193, 287, 299–300

English, H. B., *246*

Environment, *see* Burdick Apperception test, Family, Home background, Occupation of parents, Sims Score Card

Erlanger, J., *246*

Errors of measurement, 132–134, *25, 26, 28–29, 88–89, 92–93, 99–105*

Examiners, 111

Fact score, 55, *29–31*

Family, 230–245, 284–295, *172–178. See also* Homes, Sims Score Card

Fisher, G. M., 5

Forbush, W. B., 368

Formulas, for correcting r's for errors of type I, (1), (2), *100;* (3), *103;* (4), (5), (6), *104;* (7), *105;* for determining validity, (8), (9), *119;* (10), (11), (12), *120;* (13), *121;* (14), *125;* for r between cheating and IQ, (15), *135;* for r between sum of deception tests and intelligence, (16), *143;* for partial correlation of siblings, home background constant, (17), *175;* for partial correlation of siblings, intelligence constant, (18), *178*

Franzen, R. H., 36, 37, 38, *246*
Free association, 29–30
Frequency distributions, *see* Distributions
Freyd, Max, *107*
Friends, 240–241, 274–276. *See also* Associates, Sociability

Games, party, *see* Party games
God, effect of mentioning, 371–375
Goldstein, E. R., *246*
Good-Manners test, 198–200, 218, 228
Gordon, Kate, 243
Grade, *see* School
Group, differences, *186–191;* scores, 152–154, *31–32, 54–87. See also* Morale
Groups tested, 104–107, *54–87*
Gullette, R., *246*
Gundlach, R., 44, *246*

Hartshorne, H., *247*
Health, 190–193, 286
Healy, W., 23, 24, 25, 26
Hebrews, *see* Jews
Henke, F. G., *246*
Heredity, 242–244, *173, 178*
Hildredth, G. H., 243
Home background, *see* Cultural background
Home test (IER Word Knowledge), administration of, 81–82; amounts of cheating on, *215–216;* description of, 53, 81–82; directions for giving, *257, 259;* reliability of, 136, *90–93;* results of, 59–64; validity of, *110–111, 122*
Homes, analysis of, 210–211, 273–280; of most honest and dishonest cases, 283–295; rating of, 203–205, *281–287;* special study of, 200–202
Honesty, concept of, 19–20, 378; description of honest group, 308; efforts to increase, 368–371, 372–375, *209–210;* rating of, 138, *107–110;* specificity of, 379–380. *See also* Deceit, Deception, Techniques, Tests
Huschka, Mabel, 200, 210, 212

Ideals, 25–26, 413
IER achievement tests (classroom cheating tests), administration of, 67; amount of cheating on, *215–216;* description of, 52–53, 67; directions for giving, *255–259;* reliability of, 136, *90–94;* results of, 118, *44–45, 54–59;* scoring of, 75–76; *21–31;* standardization of, 68–76, 110–117, *21–32, 42–52;* validity of, *110–111, 122, 132. See also* Home test
Individual comparisons, 154–158
Individual differences, 308–311
Institute of Educational Research, 52, 66, *223*
Institute of Social and Religious Research, 3
Intelligence, meaning of term, 134. *See also* Correlations, Intelligence tests
Intelligence tests, methods of expressing scores on, 182, *134–135;* used in this study, 181

Jews, 249–256, 284, 286, 294, 296, 357–358, 360–362
Joint Committee on Methods of Preventing Delinquency, 33
Jung, C. G., *246*

Kelley, T. L., *134, 155, 176*
Klein, J., *248*
Knight, F. B., 36, 37, *246*

Landis, C., *246*, *247*
Langfeld, H. S., *247*
Larson, J. A., *247*
Leach, H. M., *247*
Lie index, 95–97, 127–130, *86–87*, *271–272*
Lying test (SA), administration of, 130; description of, 98–102; directions for giving, 98; reliabilities of, 136, *97;* results of, *84–85;* scoring of, 102–103, *18;* standardization of, 102–103, *17–18;* validity of, *122.* *See also* Cheating, Deceit, Deception, Stealing

Maladjustment, *see* Emotional condition
Maller, J., 360, 361, 371, 397
Marston, W. M., *247*
Mathews, Ellen, 193
May, Mark A., *247*
McCall, W. A., 54, 55, 181, *224*, *233*, *261*, *317*
Measurement, *see* Attitudes, Character, Techniques, Tests
Mills, E., 19
Moral education, *see* Character, education in
Moral Knowledge test, 8, 337, 371
Morale, 320–323, 330–338, *184–185*
Motion pictures, 281–282
Motives of deceit, 24–25, 113–115, 391–401, *43–49*, *239–243*
Murdock, K., 40, 43, *247*

National Intelligence test, 181
Nationality and deception, 248–253, 285, 294, 297–298, *170–172*
Neurotic index, *see* Emotional condition
Nicholson, Marian B., 210, 212
Nixon, H. K., *247*

Observation of children, proposal for, 9
Occupation of parents, 221–229, 249–250, 284, 318–319, *159–164*, *184.* *See also* Correlations
Opportunity for deception, 112–113, 115, *43–45*, *50–51*
Orr, Cora, 198
Otis, Arthur, 181, *28*, *29*
Otis, Margaret, 274, 277, 280
Overstatement test, 35–37

Paraffin-Paper test, 38–40
Parlor games, *see* Party games
Partial correlations, as tools for measuring relationships, 163–165; between: cheating and age, grade constant, 261–264, *154;* cheating and Burdick score, intelligence constant, *166;* cheating and Burdick score, Sims constant, *166;* cheating and intelligence, home background constant, 189; cheating and intelligence, suggestibility constant, 188; cheating and occupation, intelligence constant, *164;* cheating and Sims, intelligence constant, 216, *165;* siblings, in cheating, intelligence constant, 241, *173;* siblings, in cheating, Sims constant, 240, *173*
Party games (cheating tests), administration of, 125–126, *264–265;* description of, 86–89; directions for giving, *266–268;* results of, *82–83;* scoring of, 87–89, *18–19;* standardization of, *18–19;* validity of, *131–132*
Peeping tests, 40–43, 61–64. *See also* Coördination tests
Persing, K. M., 45, *247*
Physical ability, measurement of,

82–85, 191. *See also* Athletic contests, Physical condition
Physical condition, 190–192. *See also* Athletic contests, Correlations, Physical ability
Physiological tests, 30–32
Pintner, R., 40, 181, *134*
Populations tested, 105–107
Prediction, 145–146
Probabilities, 13, 75, *14*, *29–31*, *34*
Problems of research, 7–10, 403–407
Protestants, 253–255, 284, 286, 294, 296–297, *167–170*. *See also* Denomination, Sunday schools
Pupil Data Sheet, 95, 192, 281, 283, 393, *268–272*
Puzzle Performance tests (classroom cheating), administration of, 122–124; amount of cheating on, *216;* description of, 56–61; directions for giving, *250–252;* reliabilities of, 136, *97;* results of, *76;* scoring of; 56–61, *17;* standardization of, *16–17;* validity of, *122*, *131–133*

Race and deception, *see* Nationality and deception
Rating of homes, *see* Homes
Rating of honesty, 138; reliabilities of, *108;* scales used for, *107*, *112–114;* validities of, *109*. *See also* Validation of tests
Raubenheimer, A. S., 34, 35, 36, 37, 38, *248*
Reliability, concept of, 132, *88–90;* of deception tests, 136, 381, *88–97;* of test materials, *25*, *33*. *See also* Correlations, Techniques, Tests
Religious affiliation, and deception, 253–256, *167–170;* of honest and dishonest cases, 284, 294. *See also* Denomination, Sunday schools
Results of deception tests, *44*, *45*, *54–87*
Retardation, *see* School
Rich, G. J., *248*
Rogers, E. P., 82, 191–192
Ruch, G. M., 36, 38

Scale for measuring attitudes, 387–390, *225–238*
School, achievement and deception, 269–271; attendance and deception, 268–269, 314; classroom group morale, 330–338; conflicts, 400; deportment and deception, 271–273; differences, *185;* grade and deception, 257–260, *148–153*, *155–157;* morale and deception, 320–323, *184–185;* motives, 392–394; progressive *versus* conventional, 316–320, *179–185;* public *versus* private, 315–316; retardation and deception, 260–268, *148–154;* teacher influence, 324–329, 333–335, 338, *185–196*
Schools tested, 105–107
Schwesinger, Gladys, 200
Scores, comparability of, 73–74; fact and amount, 55; true, *88–90*
Scoring process, *13–14;* of deception tests, 55, 57, 58, 60, 64, 68–71, 75–76, 80, 82, 85–86, 87–89, 90–93, 96, 103, *29–31*, *233–235*
Sex differences, 168–181
Sheppard, G. S., 124
Sibling resemblance, 232–233, *173*
Sigma, *see* Standard deviation
Sims, V. M., 195
Sims Score Card, 194–198, 213–217, 317–318, 344, *164–167*. *See also* Correlations

Situations, cheating, 23–26, 400–401, 402–408. *See also* Specificity
Situations, test, in general, 11–12, *7–10*
Slaght, W. E., 243
Sociability, 276–277. *See also* Associates, Friends
Socio-economic background, *see* Sims Score Card
Spearman, C., 36, *98*, *215*
Spearman-Brown formula, *94*, *97*, *119*, *121*
Specificity, of attitudes, 387–390, *221–238;* of conduct, 380–387; *211–221;* of motives, 399–401, *239–242*
Speed tests (classroom cheating), administration of, 119–121; amount of cheating on, *215*, *216*, *219;* description of, 76–79; directions for giving, *259–262;* reliabilities of, 136, *94–97;* results of, 120–121, *65–71;* scoring of, 80–81, *33–39;* standardization of, *32–33;* validities of, *122*, *130*, *132*, *133*
Standard deviation, as a unit of measurement, 71–75, 152–160, *13–14*
Standardization process, 64, 68–71, 86, *12–52*. *See also* Tests
Stanford-Binet tests, 181
Starbuck, E. D., 243
Statistical methods, 149–165, *4–5;* problems, *5–11;* terms, 71–75
Stealing, 23–25; tests, administration of, 126–127; description of, 44, 88–94; directions for giving, *252*, *256–257;* results of, *83;* scoring of, 93; validities of, *131–133*
Stevens, Madeline L., 125
Suggestibility, 188, 277–280
Summary of studies, 407–412
Sunday schools, 357–362
System X, 339–355, *197–205*
System Y, 362–367, *206–208*

Teacher influence, 324–329, 333–335, 338, *185–196*
Teachers' ratings, 137–139, *107–118*
Techniques (for testing deception), books-read, 37–38; copying, 44–45, 49–51; double-testing, 65–71, 75–76, *19–21;* duplicating, 51–52, *12*, *223*, *248;* free association, 29–30; improbable achievement, 55–65, *12–14;* overstatement, 35–37; paraffin-paper, 38–40; peeping, 40–43; physiological, 30–32. *See also* Formulas, Tests, *and the names of various tests*
Techniques, criteria of, 47–48; list of, 49; reliabilities of, 136, *97;* scheme for classifying, *8–9;* validities of, *122*, *130–133*
Terman, L. M., 35, 37, 42, 181, *248*
Test ability and deception, 395–397, *146–148*, *239–242*
Test material and deception, 381–385, *51–52*, *215–219*
Test situations, analyzed and classified, *7–10*
Tests, administration of, 110–130, *248–268;* descriptions of, 34–103, 191–192, 193, 194–212; directions for giving, *248–268;* facsimiles, copies, and samples of, 41, 52–54, 56, 61–63, 77–78, 91, 95, 98–102, 193, 198, 199, 207–209, *271*, *287–297;* reliabilities of, 36, 39, 43; results of, 36–39, 42–43, 54–87; scoring of, 35, 36, 38, 39, 42; validities of, 39, 43; values and limitations of, 11–12, 144–147, *10*. *See also* Athletic contests,

Burdick Apperception test, Co-ordination tests, Home test, IER achievement tests, Lying test, Party games, Puzzle Performance tests, Speed tests, Stealing, *also* Correlations, Partial correlations, Reliability, Scores, Scoring process, Standardization process, Techniques, Validity
Thomson, G. H., *134*
Thorndike, E. L., 52, 53, 54, 55, 66, 67, 181, *25*, *29*, *31*, *114*, *135*
Traits, *see* Specificity
Trow, W. C., 368
Truxal, A. G., 124

Validation of tests, 138–147, *106–118*, *122–133*
Validity, concept of, 131–138, *10*, *118–121*
Virtues, 378
Voelker, P. F., 34, 38, 40, 44, 61, 64, 65, *248*

Washburn, M. F., *247*
Watson, G. B., 34
Wechsler, D., *248*
Wertheimer, M., *248*
Wiley, L. E., *247*
Woodworth, R. S., 193

Xi scores, 72–73, *13–14*, *20*

Yerkes, R. M., *248*

DATE DE RETOUR

21 NOV. 1991

UM-5

BIBLIOTHÈQUE CHAMPLAIN

3 9365 00185999 2

Université de Moncton
JUIN 1 1972
No. d'Accession
128496

CHAM LC 268 C41 1928 v.1
Character Education Inquiry.
Studies in the nature of
character